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Better to serve the Nation

We shall begin this war when every day and night the great mass of our people say to themselves with anxious inquiry: "Have I this day done everything I could in every way open to me to slave and toil for the war effort?" — *From The Veterinary Record (London), March 14, 1942.*

In their war effort, American veterinarians have mobilized themselves into a mighty disease-fighting army, under central direction, the like of which was never before organized in the defense of a nation.

"Corn States" Salutes the Effort

HOME OFFICES AND BIOLOGICAL LABORATORIES, OMAHA, NEBR.

SERUM PLANT, RALSTON, NEBR.

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Veterinary Unity*

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Boston, Mass.

IT IS A PLEASURE and an honor to be here this evening to extend greetings and best wishes from the American Veterinary Medical Association.

When the invitation was extended to me to speak at these Honor Day Exercises of the New York State Veterinary College, I was requested to avoid making a serious address. And yet, I doubt that I can fulfill that request, in view of the fact that these are serious times. Grave problems are confronting everyone. Our first consideration is to do our part, whatever it may be, to win this war. Courage, unity and sacrifice are essential to the preservation of the nation.

I am sure that, as the time is approaching when you will receive the coveted degree in veterinary medicine, you are confused somewhat as to the future. A feeling of uncertainty is only natural in this world of chaos, but we believe you are entering the veterinary profession at a time when the future holds greater opportunities than at any time in the past.

As a result of the war the two-fold responsibility to the public, which is ours, has been increased enormously. I refer to the protection of the livestock industry against the ravages of diseases, which could deplete or even entirely destroy the nation's food supply, and to the protection of human health and welfare against animal diseases communicable to man. With the possibility of widespread outbreaks of highly contagious diseases through sabotage, the responsibility is greatly intensified. This type of warfare has been practiced by the Japs in China, where germ-laden rice and other material has been dropped from airplanes. It is obvious that following the war America will be called upon to replenish the livestock of many countries. This will enhance the value of our own animals and increase the demand for veterinary service. It truly has been said that "the livestock industry is the cornerstone of American agricultural wealth, and the veterinary profession is its guardian". Veterinarians of ability and integrity need have no fear of the future. The fact that veterinarians, through the Procurement and Assignment Service, Office of Defense Health and Welfare, have been classified with physicians and dentists is ample proof of the significance of our profession in the eyes of the government and the public. The veterinary profession has advanced to a degree whereby the professional and social heritage which has been established, places you and all qualified veterinarians on the same starting level as the men in other learned professions. This has not occurred as a mere fortuity, but is the result of interest and work on the part

*Address delivered at the banquet of the Honor Day Exercises, sponsored by the Junior Chapter of the American Veterinary Medical Association, Cornell University, March 14, 1942.

†President, American Veterinary Medical Association.

of those willing to contribute to the advancement of veterinary science.

Unfortunately, too many veterinarians do not realize or appreciate what has brought about the present standing of their profession. Perhaps you gentlemen about to enter the profession do not realize the fact that you would not have enrolled in a veterinary college had it not been for the standards attained through concerted efforts. The guiding influence has been unity and organized effort, as represented in, and fostered by the American Veterinary Medical Association. Starting 79 years ago with about a dozen far-seeing men, vitally interested in the advancement of the veterinary profession, the Association has grown to an international organization of approximately 7,000 members. Through the years it has molded the course of the profession to its present high level of service and standing, by consistently and persistently exerting its organized efforts to promote and safeguard two fundamental essentials:

1) The advancement of veterinary science through education and research.

2) The application of professional knowledge by properly trained men in accordance with approved ethics of medical practice.

It would be impossible to list all of the accomplishments that have been achieved as a result of these fundamental aims. Permit me to mention a few.

1) Increased unity in organized veterinary effort—the membership increased from 4,300 to more than 7,000 in the last three or four years. (I am glad to know from Dr. Stephenson that 100 per cent of the graduating class are joining.)

2) The maintenance of a nation-wide publicity program through newspapers, periodicals and radio, on the standards and significance of modern veterinary science.

3) Deferment consideration for veterinary students and rural practitioners from military service obtained by coöperation with other agencies.

4) Veterinary recognition obtained in the Pharmacopoeia.

5) Priorities for veterinary supplies obtained by coöperation with other agencies.

6) The establishment of connections for our veterinary literature in medical and biological fields.

7) The importance of the veterinary profession in the national defense effort, in army and civilian life, has been brought to the attention of the government and public, and has attained recognition thereby.

8) The establishment of a research program for creating fellowships, thereby encouraging and fostering all veterinary research endeavor, and also encouraging more young men to become research workers.

9) Publication of a journal of veterinary research.

10) Through its Special Committee on Diseases of Poultry, an excellent and comprehensive plan has been submitted to Washington, which is designed to stop losses due to preventable poultry diseases and thus provide the increased production of 700 million dozen eggs, which Secretary of Agriculture Wickard has asked of the poultry industry in 1942. The program has been endorsed by the government and will be known as the AVMA plan.

Other matters receiving attention, currently, in addition to the important Procurement and Assignment Service are:

1) The proper distribution of veterinary services throughout the country.

2) A clarification of tire rationing regulations affecting licensed veterinarians.

3) The support of a bill to procure a brigadier-generalship for the head of the Veterinary Corps.

I could tell you of a great many more activities of the Association which are of importance to all of us, but I am sure the things I have so briefly mentioned will impress upon you the significance of unity and organized effort within our profession.

We look to the young men entering our ranks to carry on the advancement; to have broad vision; and to have courage to meet the many problems which will confront them as individuals and the profession in general. You are entering a profession filled

"Front Yard" of the Convention Headquarters

This is a view of Chicago, looking north over the outer drive and Lake Michigan, with the Stevens Hotel in the left background. The Stevens will be headquarters for the seventy-ninth annual meeting of the AVMA, August 17-20, 1942.

with opportunities for worthwhile service and a useful life. You will graduate from a veterinary college which is one of the best in the land—yes, in the world. The veterinary profession is proud of Cornell and its alumni. Such men as Law, Gage, Moore, Fish, Williams, Udall, Frost, Dean Hagan and many others who have served the college well and who have done so much for the advancement of veterinary science, will go down in history as some of the pillars upon which the veterinary profession of this country stands. May you uphold the standards and traditions of your alma mater. To attain your goal, study, sincerity and courage are essential. Courage of the spectacular type such as seen in warfare or athletic contests is a wonderful thing, but I think sometimes that every day courage is even more wonderful; courage to do what you do not want to do but ought to do; courage to smile when things go against you; courage to do better when you can get by with well-enough, and courage to adhere to the principles and ethics of the veterinary profession.

In closing may I wish you the best that life holds; may each of you become a prominent and prosperous veterinarian. To this end I leave with you the words of the poet Morriston:

"You can only be beaten by you yourself
When you crouch and cry and whine.
A craven heart is a thing to dread
And courage, a crown divine."

Biological Research Institute Fellowships

The Zoölogical Society of San Diego announces the renewal of two research fellowships available to advanced graduate students of either sex for research work at the Biological Research Institute in the fields of bacteriology, parasitology, veterinary medicine, food preservation and other problems related to national defense. The stipend of each fellowship is $1,000 per annum.

The Institute is concerned with problems relating to the health and normal life of animals, in and out of captivity, and to other phases of biological research. New animals are continually arriving from different parts of the world, often presenting special problems in the fields mentioned.

Applicants should furnish full information regarding academic preparation, degrees, and the specific problem of proposed research. Letters of recommendation and photographs of applicants are desirable. Male applicants must state their status regarding selective service requirements as requests for deferment will not be made.

Requests for further information and applications should be addressed to Dr. Frank D. McKenney, Biological Research Institute, Balboa Park, San Diego, Calif., before May 15, 1942.

Experimental Influenza of the Horse*

As the country goes into military operations which will lead to the agglomeration of horses and mules from the place of procurement to the front lines of battle, the disease we call equine influenza is apt to show up with all of its deadly force. The time is, therefore, propitious for an analysis of what is now known about this merciless malady.

The Confused Nomenclature

Under the name "typhoid fever of the horse" the French filled the literature with reports of their theories on the nature of this morbid complex. The German authors called it *pferdestaupe*, the British, epizoötic cellulitis or pink eye, while Americans, without apparent justification, adhered quite closely to the name "equine influenza".

As early as 1882, from rather vague clinical observations, Dieckerhoff divided these typhoid maladies into three classes, namely: (1) *pferdestaupe* or typhoid fever proper, (2) *brustseuche* or contagious pneumonia, and (3) *skalma* or contagious bronchitis or influenza (grippe). In passing, it should be admitted that this classification has been at least partly confirmed in recent years. Only the specific agent of the pneumonia phase remains undiscovered. Dieckerhoff separated horse typhoid (our influenza) into three groups which microbiologists of the present day are inclined to recognize as distinct entities, each having its own causative agent. Of these three groups, J. Basset,[1] professor emeritus of the French schools, points out that two of them—typhoid fever and contagious bronchitis (influenza proper)—are "distinct morbid entities each caused by their own filtrable virus".

For a number of years following the turn of the century (1897), the intrepid French writer, Lignières, confused the issue with a lot of premature theories which attempted to place these typhoid maladies among the pasteurelloses. The theories of Lignières are now regarded as unfortunate. They took the next generation on a wild chase and led nowhere. No such flora was ever incriminated, notwithstanding the acute, fatal malady it was supposed to produce. So far as cause is concerned, the genus Pasteurella is, therefore, no longer entertained. The old excuse that the organisms quickly disappear in the cadaver is taken as a grain of salt. The modern research worker could not be convinced that the fleeting flora of an acute disease can vanish so quickly, or be so elusive in material taken from the sick.

There has not been much research work on equine influenza in the past 25 years but from what can be gleaned from current literature and the more recently published books on veterinary medicine, the clinical observation of Dieckerhoff set down a sensible basis for present studies. There is a complex to unravel by identifying the specific agents of *epizoötic cellulitis* (pink eye) of the British, of *contagious bronchitis* or true influenza comparable to swine "flu" and human influenza, and lastly of *contagious pneumonia*, known also as contagious pleuropneumonia, the causal agent of which remains to be identified.

The name "typhoid fever" of the French authors, while etymologically apropos, was never employed in this country and in view of the present unraveling process of investigators of the U. S. Bureau of Animal Industry and of the U. S. Army, together with the interrupted researches of Europe, it is likely to replace entirely the more distinct etiologic entities growing out of a broader and more practical knowledge of virus diseases. Different viruses, or probably the multiplicity of the same viruses, will no doubt shape future conceptions of this important equine malady. There is no assurance that the famous streptococcus of Schutz, recognized causal agent of colt distemper, is not preceded by a specific fil-

*This article is an excerpt from a series of two articles by J. Basset, professor emeritus of the national veterinary schools of France, published in Revue de Médecine Vétérinaire, xcvii (Jan.-Feb. and March-April, 1941), pp. 5-77.

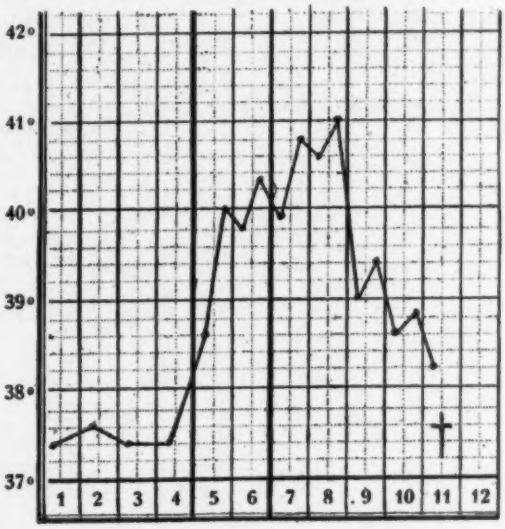
[1]Basset, J., La fièvre typhoide de cheval, Revue de Médecine Vétérinaire, xvii (Jan.-Feb., 1941), pp. 5-29.

trable virus, yet unknown, or perhaps by one of the viruses of the influenza complex. To all of this one must add paratyphoid B to the list of maladies confounded under the terms typhoid fever, shipping fever, influenza, pink eye, distemper, etc., used in trying to conform to the notions of the different authors.

EPIZOÖTIC TYPHOID FEVER OF THE HORSE (OUR INFLUENZA)

Basset (*loc. cit.*) describes typhoid fever of the horse as a highly contagious, inoculable, virus disease that requires no additional microbic aid. It is manifested by pronounced stupor (typhoid), congestive and edematous lesions more or less grave and generalized. It develops without remission or bacterial complication. It requires no treatment other than rest, recedes quickly, and it confers a solid and lasting immunity. The victims on recovering remain carriers of the virus and spread the disease for an indefinite period. Outbreaks, like other virus diseases, vary from benign to serious. It can be transmitted in coition by stallions that have recovered. The virus exists in the blood (Basset, 1911)[2] and it is distinct from the virus of infectious anemia (swamp fever).

Symptoms.—From the time the virus is introduced into the body, experimentally, there is a period of incubation of three days. On the fourth day the temperature rises to 40 C. (= 104 F.) and on the fifth it may go up to 41 C. Yet in spite of this hyperthermic state, the patient may not yet appear to be sick. Diminished appetite and injected mucous membranes, plus the high temperature, completes the early syndrome. Beyond this period there is pronounced stupor, innappetence, purulent conjunctivitis, agglutinated eyelids, and swollen extremities. The temperature seldom rises above 41 C. (= 105.8 F.). The temperature drops rapidly to around 102 or 103 F., but the general conditions remain bad—weakness, anorexia, relaxation of the anus and occasional paraphimosis are marked, respiration accelerated and raucous, nostrils dilated and nasal mucosa dark red. About the sixth day the edema (cellulitis) extends to the fore limbs and ventrum, and on the eighth day of febrile state the horse is down and prefers to remain so. Violent symptoms follow: agitation, asphyxia, opisthotonos, projecting eyes, sweating, pawing with all fours (delirium). The horse is killed to end its suffering. The



—*After Basset, 1911*

Experimental Equine Influenza — Grave Form (Fièvre Typhoide Expérimentale).

The horse was inoculated intravenously with 100 cc. of blood taken from a horse sick from influenza. The period of incubation was 3 days; duration of hyperthermia, 2 days; duration of the disease 5 days (death). To be noted is the rapid rise of the temperature to 40 C. the first day and to 41 C. on the second day; and the rapid drop to the time of death.

symptoms, it will be conceded, are not unlike those of the spontaneous infection acquired in the course of an outbreak.

The lesions found *post mortem* were subcutaneous edema, vastly distributed over the abdomen and limbs, congested mucous membranes of the eyes, respiratory tract and small intestine; petechiae and ecchymoses of the lungs, visceral pleura, pericardium and myocardium; albuminuria and absence of inflammatory reaction anywhere. Histologically considered the lesions were those of bacterial or virus infections.

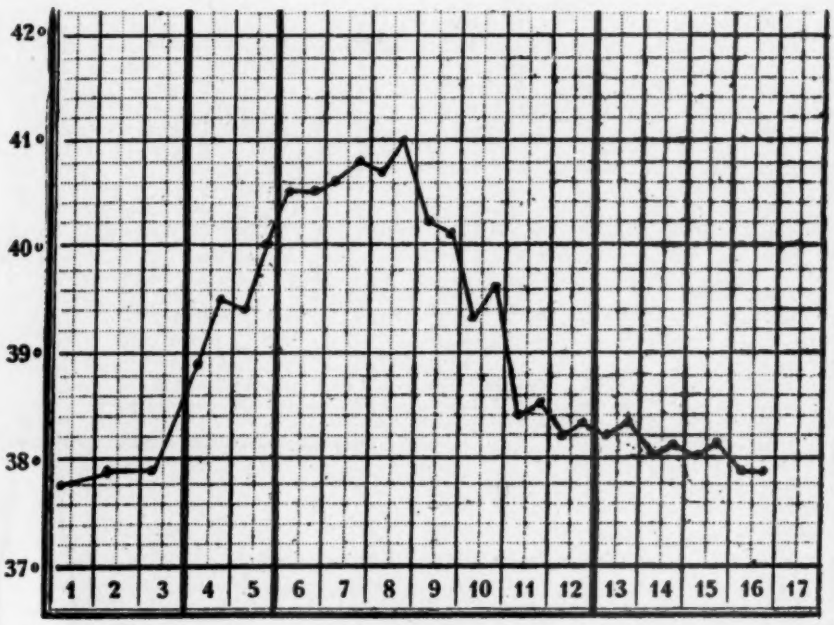
Thus, one of the phases of the equine

[2]Basset, J., Cause déterminante de la fièvre typhoide de cheval (influenza, grippe, pasteurellose, pferdestaupe, pink eye). Compte Rendu, Académie des Sciences, August 21, 1911.

influenza complex is set apart from the others as a proved specific virus disease. Whether the virus is unique or multiple remains to be established. In all of these experiments, the origin of the virus was the same—from horses of one outbreak in Paris.

DIAGNOSIS OF SPONTANEOUS EQUINE INFLUENZA

While numerous causes can account for the predominance of certain symptoms, limbs. Paralysis of the penis is common in rabies and paralysis of locomotory muscles, rectum and bladder are of common occurrence in other diseases. There are, therefore, instances where the clinical diagnosis has to be confirmed to be exact. Basset makes the bold statement that in the absence of another contagious disease there are no complications (pneumonia, pleuropneumonia, strangles, etc.), nor is there any parallel disease of the horse from which it need be differentiated. Contagious



—After Basset, 1941

Experimental Equine Influenza—Benign Form (Fièvre Typhoide Expérimentale).
The horse was inoculated intravenously with a filtrate of blood taken from the horse shown in Fig. 1. The period of incubation was 2½ days; duration of hyperthermia, 2 days; duration of symptoms, 7 days. It required 4 days for the temperature to drop to near normal and several days after disappearance of the symptoms to return to normal.

taken collectively the manifestations are quite similar in the same patient. Although the clinical and anatomo-pathologic examination is generally sufficient to arrive at a correct diagnosis, doubtful cases could only be diagnosed to an absolute certainty by experimental inoculation of the virus. This would be particularly true where the predominant symptoms were nervous, such for example, as the nervous symptoms of hog cholera and encephalitis of the horse, in which Moussu signalized edema of the pneumonia or contagious pleuropneumonia and infectious bronchitis (grippe or true influenza) are different entities due to causes as different as that of infectious anemia, from which it may occasionally have to be differentiated.

INFECTIOUS BRONCHITIS (= GRIPPE, INFLUENZA)

Infectious, contagious or epizoötic bronchitis of the horse, like typhoid fever above described, is very contagious. It is trans-

mitted by cohabitation with the sick or by instilling well-chosen intranasal material into susceptible horses. In spreading by cohabitation the period of incubation is three days.

Symptoms.—The onset is coryza followed by congestion of the conjunctivae and pituitary, serous nasal discharge, loss of appetite, moderate depression, and fever. But these symptoms are of short duration, about 12 hours, and may pass off unnoticed unless the animal's temperature was taken during that time. After that prodrome, there is a cough (dry, raucous, deep) lasting several weeks, with some nasal and ocular discharge. If these symptoms are not heeded and the animal given rest, the disease develops into the characteristic bronchopneumonia with or without pleurisy. It is frequently fatal after running the atypical course of that type of pulmonary infection. This is a common form of "influenza" of horses. It is clinically and etiologically different from, yet commonly confused with, the typhoid form. Infectious bronchitis, like contagious pneumonia, is readily differentiated from typhoid by the fact that the blood of the affected is not inoculable, notwithstanding that the specific cause is a filtrable virus. The complications (pulmonitis, pleuritis) are the work of hemolytic streptococci. The disease is transmissible with material taken from infected bronchioles at least the first seven days of the attack. The disease can be produced by experimental inhalation of suspension of the infected material. The virus theory is confirmed by using filtrates of the suspensions. The duration of the immunity depends upon the intensity of the symptoms.

As was demonstrated by Waldmann, Kobe and Pape[3] in 1935, contagious bronchitis of the horse is transmissible to hogs and to cattle either naturally or experimentally. In cattle, the disease is highly contagious and even more grave than in horses, and is capable of causing massive pneumonia. The hepatized foci contain the secondary organisms (streptococci, Pasteurella) which are but little pathogenic for laboratory animals. It has not been possible to incriminate these organisms as the cause of outbreaks.

The alleged relation of these viruses to that of infectious anemia is disposed of by the inoculation of "influenza-immune" horses with the virus of that disease.

So far as available knowledge is concerned, there is little to be added. It seems essential to differentiate, clinically, the two known virus infections (typhoid fever and contagious bronchitis), and these from contagious pneumonia, obviously caused by a virus yet to be identified.

In view of the knowledge coming to light on the handling of viruses, it is reasonable to predict that the mystery of so-called equine influenza will soon be solved.

[3]Cited by Basset, *ibid.*, p. 53.

Better Care, More Eggs

An egg is two-thirds water. A good hen needs about 18 gallons of water a year, and in the winter the water should be warm, says the U. S. Department of Agriculture. Farm Security Administration field workers are stressing good care of hens as basic in the country-wide campaign for more egg production. They have found that even old hands sometimes slip up on the obvious things. In winter the chicken house should have plenty of clean nests, adequate feeders, and ample water supply.

Backward Scholars

Tabor College of Iowa is open only to high school boys of the lower grade level. Valedictorians are not wanted. The object is to prepare dull students for white collar jobs: shipping clerks, bookkeepers, private secretaries, foremen, overseers, etc., which mediocre minds can fill. Educators, such as President Hutchins of the University of Chicago, for example, have contended that there is no place in higher education for dull students, so Tabor is going to make a place for them in the lower bracket of man's work. But, watch these dull students, they are apt—very apt—to have the valedictorians on their pay roll.

Chastek Paralysis in Foxes*

B_1 Avitaminosis Induced by Feeding Fish

R. G. GREEN, M.D.,† C. A. EVANS, M.D.,† W. E. CARLSON, B.A.,‡ and F. S. SWALE, D.V.M.‡

AN OUTBREAK of a paralytic disease among silver foxes, first observed in Minnesota in 1932, was described by Green[1] under the name of Chastek paralysis. The relationship of this disease to the feeding of whole, uncooked fish, and the nature of the disease as a vitamin-B_1 deficiency were presented in 1937 by Green and associates.[2, 3] An outbreak of a similar disease in Sweden was reported in 1938 by Carlström and Jonsson,[4] and in 1939 the occurrence of a similar condition in Norway was described by Ender and Helgebostad.[5] These authors believed the disease to be a vitamin-B_1 deficiency but did not relate its occurrence to the consumption of fish. Lunde,[6] in 1939, opposed the idea that fish was a causative factor and that the condition was a vitamin-B_1 deficiency. Coombes,[7] 1940, also observed Chastek paralysis in foxes and accepted the findings of Green that it was due to the feeding of fish but considered it a poisoning and not a deficiency disease. In 1940, Green and Evans[8] published a description of the characteristic pathology in the brain of affected foxes, pointing out that these changes were typical of a vitamin-B_1 deficiency. In 1941, Green, Carlson and Evans[9] demonstrated that Chastek paralysis could be prevented experimentally by feeding thiamine hydrochloride. Proof that a deficiency of vitamin B_1, due to a fish diet, is the true derangement in Chastek paralysis has now been provided by experimental production of the disease, by pathologic findings, and by prevention of the disease through the feeding of pure vitamin B_1. Green, Carlson and Evans,[10, 11] 1941, 1942, have shown that the inactivating factor is not found to any extent in the carp fillets but is found in the abdominal viscera, the skin, and head. Coombes,[12] 1941, has confirmed the finding that raw fish is destructive to vitamin B_1; and Spitzer, Coombes, Elvehjem and Wisnicky,[13] 1941, have shown that the destruction of thiamine *in vitro* by fish entrails takes place within an hour at room temperature. Wolf,[14] 1941, has identified in trout a disease caused by diets of raw fish, and has shown that it is prevented by the addition of thiamine to the diet. In a comparative study, Alexander, Green, Evans and Wolf,[15] 1941, have demonstrated the clinical and pathologic identities of alcoholic encephalopathy in man, Chastek paralysis of foxes, and Wolf's disease of fish. A detailed description of the pathology of Chastek paralysis has been presented by Evans, Carlson and Green,[16] 1942.

COURSE AND SYMPTOMS

The disease is characterized by the rapid development of paralysis, usually followed by death within 48 to 72 hours after the first symptoms. The symptoms are seen after a period of a week or two in which loss of appetite, sometimes with diarrhea, is the chief but indefinite evidence of illness. Once begun, the disease quickly appears on all parts of a ranch, causing a high mortality within two or three weeks.

The outbreaks of Chastek paralysis have occurred only on ranches where certain types of fish or fish products constituted 10 per cent or more of the feed. The usual sequence of events leading to the appearance of the disease is as follows: During the late fall or winter months, fresh frozen fish is added to the regular fox ration in a proportion varying from 10 to 50 per cent of the total diet. No harmful effects from the change in diet are noted for a variable period, generally several weeks. Then the foxes begin to refuse feed. During the fol-

*A coöperative investigation by the Minnesota Department of Conservation and the University of Minnesota.

†Medical School, University of Minnesota, Minneapolis, Minn.

‡Fromm Laboratories, Inc., Grafton, Wis.

lowing week the amount of food left by the foxes increases progressively; some of the foxes leave part of the ration and others leave all of it. After about a week or two of loss of appetite, the first cases of definite illness are seen. A few foxes have an abnormal gait as though their legs were somewhat stiff. The progress of the disease is very rapid after the first nervous disturbances arise. Within 12 to 36 hours, foxes showing these early signs usually exhibit an extensive spastic paralysis and are unable to rise, or to stand if placed on their feet. Convulsions often occur shortly before death. The animal seems to have a general, abnormal sensitivity to pain; if its fur is touched, it winces. Although almost completely paralyzed, the fox remains conscious. The respiration is commonly rapid with easy inspirations and forced expirations accompanied by moaning, a very characteristic symptom of this disease. In some animals there occur transient spasms of the throat. A fox that has been lying on its side, moaning and unable to rise, suddenly begins to struggle for air. After a few moments the spasm subsides and the animal takes a deep breath, which is followed by an easy expiration. Then the breathing goes on as before. Death generally occurs within 12 hours after total paralysis of the limbs has set in. We have never seen an animal recover spontaneously after the disease has reached the paralytic stage.

If fish is retained as 10 per cent or more of the diet after the first foxes show symptoms of Chastek paralysis, more and more foxes develop the disease. In one outbreak, fish was used in the diet for a period of three weeks after the first death, with the result that one-third of the 200 foxes on the farm died. If the feeding of fish is discontinued within a day or two after the first deaths occur, the subsequent course of events appears to be determined almost entirely by the type of diet the foxes are offered. For example, if the new diet consists of two-thirds red meat and one-third poor-grade cereal, deaths continue for two or more weeks after the diet is changed, and the outbreak subsides gradually. On the other hand, if the new diet includes a large proportion of liver, milk, eggs, and perhaps some yeast, and if it is otherwise well balanced, containing ample red meat, cereals and a moderate proportion of fresh vegetables, the recovery from the outbreak of Chastek paralysis is much more rapid.

ACUTENESS IN NURSING PUPS

Green[17] has described outbreaks of Chastek paralysis in fox pups in which a third of the nursing puppies on a ranch have succumbed in a three-day period, with an immediate disappearance of the disease upon dietary changes. Young nursing foxes exhibit an acute form of the disease. Death strikes quickly and the characteristic lesions of the disease are not found in the brain of the pups at necropsy. It has been shown[18] that an adult lactating animal, subsisting on a ration deficient in vitamin B_1, conserves what vitamin B_1 it has in its body for its own use, with the result that this essential element of nutrition may be absent from the milk long before symptoms of a deficiency appear. If such an animal is given a diet containing only enough vitamin B_1 for its own needs, very little will be found in the milk. This fact has been demonstrated in the case of rats fed diets that had insufficient amounts of the vitamin; the mothers showed no symptoms while the offspring developed avitaminosis. Comparable results have been obtained in human beings. Children have been stricken with beriberi as a result of their mothers' receiving only small amounts of vitamin B, although the mothers apparently received enough of the vitamin to remain well. Correspondingly, it may be expected that lactating foxes fed a diet with insufficient amounts of vitamin B_1 will produce milk in which this vitamin is absent and that a deficiency in the pups will result. This explains why outbreaks occurring in the spring are so much more acute and severe among nursing pups than among the adult animals. The rapidity with which the disease strikes fox pups offers a possible explanation of the absence of lesions in the brain. Death comes so swiftly that there is no time for the proliferative lesions to develop. The treatment of nursing fox pup-

pies with thiamine produces a cure as rapidly as the disease develops.

EFFECT ON PREGNANCY

A factor of major economic importance to the fox farmer is the effect Chastek paralysis has on reproduction in the herd. Available information indicates that an outbreak of this disease during the latter part of the gestation period will cause death of the fetuses and subsequent abortion in a large porportion of female foxes, even though the mortality rate among adult foxes is low. The disastrous effect that Chastek paralysis may have on reproduction was shown in the outbreak on a ranch near Grand Forks, North Dakota.

The first symptoms of Chastek paralysis were seen on this fur farm on March 12, when "the whole herd went off feed". About 15 per cent fish was used in the diet until March 25. A curative diet containing liver was first offered on March 28 and caused a rapid improvement in the condition of the foxes. Twenty-eight deaths occurred between March 27 and April 10.

The mating season for silver foxes begins late in January and continues through February into the first part of March. Fox pups are usually born during the period from late March to early May, after a gestation period of 52 days. Thus the Grand Forks outbreak began when practically all the females were pregnant and the disease persisted well into the normal whelping season. In the six adult females that were lost during the outbreak, fetuses were found that apparently had been dead for a considerable period of time before the female died.

Although the 134 adult females still alive after the outbreak showed no residual symptoms and appeared to be in good health, only 15 of them raised their young. From the 15 litters, however, 73 pups grew to maturity. We do not know exactly how many of the living young which were whelped on this ranch died before they could be counted; however, there is no reason to believe the number was large. Probably about 80 per cent of the females that survived the acute disease aborted.

From our observations it seems justifiable to present, at least tentatively, the following generalization: A moderately severe outbreak of Chastek paralysis occurring just before the breeding season does not interfere with reproduction. A similar outbreak occurring during the gestation period and terminating shortly before whelping time will cause intra-uterine death of fetuses and abortion.

VARIATIONS IN SUSCEPTIBILITY

An extensive outbreak of Chastek paralysis on a multiple-unit fox ranch serviced by a single feed house has presented an opportunity to observe clearly the variations which may occur in susceptibility to a vitamin-B_1 deficiency. A comprehensive dietary experiment involving the feeding of Atlantic whiting to foxes was undertaken by Fromm Brothers, Nieman and Company of Wisconsin in the winter of 1935-36 to determine how a fish ration would affect reproduction. Beginning on November 20, 1935, fresh fish, canned fish, and fish meal were fed to various groups of foxes on Ranch A, the Federal ranch and the Silvercross ranch, which were serviced from a single feed house. Deaths at the rate of two or three a day began about January 1, 1936, on all ranches. In the three days, January 25, 26, 27, a total of 29 foxes died. From January 28 through 30, a high point of 83 deaths, an average of almost 28 a day, was reached. Losses occurred throughout all the ranches, but they were confined almost entirely to pens where fresh fish was fed. When fish was removed from the diet on January 25, the mortalities dropped to about five a day for two weeks, and to two or three a day for the following two weeks; the outbreak terminated in the first days of March.

On the three ranches, 4,260 breeders were being fed fresh fish, frozen Atlantic whiting; 1,292 were receiving canned fish, Pacific-coast mackerel; and 1,194, fish meal, a cooked and dehydrated product. A small control group of 156 received no fish. In some blocks of pens fresh fish was given to all animals; in some, it was fed in alternate rows of pens; and in others, it was

fed to foxes on only one side of the block. Outbreaks of the disease occurred simultaneously on all three ranches and caused severe losses in only those blocks or parts of blocks where fresh fish was fed. Of the 4,260 foxes fed fresh fish, 6.7 per cent died, whereas of the 2,642 foxes not fed fresh fish, only 0.9 per cent died.

The mortality in this highly inbred group of foxes receiving frozen fish ranged from 3 to 15 per cent in the various blocks. Some of the differences in the mortality rates are probably due to the errors inherent in comparing large and small samples. Others, however, cannot be explained in this way. On Ranch A, for instance, there was a mortality of 3 per cent in block D, which contained 386 foxes, while in block H, containing 312 foxes the mortality was 9 per cent. The highest mortality, exclusive of a small unit of hospital pens, was 13 per cent on an isolated unit of 524 foxes in one large block. It must be concluded that susceptibility to the effect of vitamin-B_1 deficiency is highly variable and that groups of foxes segregated for breeding through five or ten generations have developed varying degrees of group susceptibility to the effects of a deficiency of this vitamin.

Fig. 1. Chastek paralysis in red foxes, experimentally produced by feeding uncooked carp.

SEX RATIOS

Foxes of both sexes are susceptible to Chastek paralysis, but animals of one sex may be more severely affected than those of the opposite sex in a given outbreak. For example, of the 71 foxes that died of Chastek paralysis in the first outbreak studied, 49, or 69 per cent were males. Although nearly 60 per cent of the foxes on a Dakota ranch were females, about 80 per cent of the animals that died in the outbreak were males.

At the time fish disease developed on the Fromm Brothers, Nieman and Company ranches, breeding pairs were maintained in all pens, the ranch population being composed of an equal number of males and females. There was, however, a wide divergence from this sex ratio among the affected animals in the different blocks where the disease occurred.

The mortality of 7.8 per cent among all the male foxes greatly overbalanced the 5.6 per cent loss among females. For the entire outbreak this difference ($P=0.0047$) is highly significant. The greater total loss among males has been found due to a persistence of the disease principally in males during the decline of the outbreak. At pres-

ent a logical explanation of the difference in mortality rates among foxes of the two sexes is not apparent.

PATHOLOGY

At necropsy the internal organs of foxes that die from Chastek paralysis show changes typical of that disease. A pathological diagnosis can be established with certainty on the basis of specific lesions or injuries in the brain which are typical of a pure vitamin-B_1 deficiency. In the heart, as a rule, there is a cloudy swelling, which may be so severe that the heart muscle appears cooked. Many small hemorrhages are

Fig. 2. Medulla (x 65). Marked increase in vascular bed and multiple hemorrhages. Hematoxylin and eosin.

also present in the heart tissue. Definite fatty degeneration is seen in the liver, and black tarry blood is sometimes found in the intestinal tract. Areas of acute congestion and inflammation of the intestinal lining are common, and ulcers are often found in the stomachs.

Small, spot-like hemorrhages can usually be seen grossly in the brain and spinal cord on section. These lesions occur typically in pairs, in bilaterally symmetrical positions. The fundamental change is in the small blood vessels; capillaries and other small vessels are very prominent as a result of a marked overgrowth of the cells making up the lining membrane of the vessels. When these vessels rupture, they produce the hemorrhages that are so characteristic of the disease. The typical pathological changes found in the brain are shown in figures 2 and 3. The balanced distribution of these lesions on both sides of the brain and the striking microscopic changes in the small blood vessels are peculiar to Chastek paralysis in the pathology of fox diseases. The same type of brain lesion has been produced in experimental animals by feeding diets deficient in vitamin B_1,[8] and is found in man in the case of Wernicke's disease, more commonly known as alcoholic encephalitis.[19] Nursing fox pups develop an exceptionally acute form of the disease in which death comes quickly and no anatomical lesions develop.

EXPERIMENTAL DISEASE

Chastek paralysis can be produced experimentally in foxes by the feeding of rations containing fish. The kinds of fish fed on the various fur farms where Chastek paralysis has been studied are fresh-water carp, Atlantic-coast whiting, Pacific-coast mackerel, quillbacks, mullets, suckers, northern pike, and herring from Lakes Superior and Michigan. Of these, carp appears to be the most active in producing the deficiency, and this fish has been used in experimental studies.

In the fall of 1932, 20 foxes on the Chastek farm were fed fish from the same supply that caused a severe outbreak of the disease earlier in the year. The fish had been preserved in a frozen condition. After several weeks the animals began to leave their feed. Ten of the foxes then placed on the usual ranch diet containing no fish, soon recovered their appetites and showed no further symptoms. The remaining 10 foxes continued to leave their feed and began to show neurologic symptoms of illness. At this time fish was eliminated from the diet and the sick animals were restored to health by the force-feeding of diluted milk.

Early experimental studies carried out

on the Fromm Brothers, Nieman and Company ranches confirmed the belief that this disease may be artificially produced by feeding fish. In one experiment begun on January 19, 1937, 64 red foxes were fed a diet of which 50 per cent was fish. A total of eight foxes in the group died of what was clinically and pathologically Chastek paralysis; the first died on March 17 and the last on April 5.

PREVENTION WITH THIAMINE

On July 12, 1940, experiments were undertaken which showed conclusively that Chastek paralysis can be produced by fish and prevented with vitamin B_1. To insure against their eating grass, mice or feces, the 46 foxes on this experiment were placed in elevated pens with screen floors. To a diet known to be satisfactory for the maintenance of foxes, frozen carp was added as 20 per cent of the ration. Included in the basal diet were 15 per cent cereal (a mixture of ground wheat, corn, oats and rice), 10 per cent pulverized dry bread, 9 per cent carrots, 45 per cent horse meat and 0.5 per cent cod liver oil. Eighteen of the 46 foxes were given 20 mg. of nicotinic acid (as a vitamin of the B group other than B_1) in addition to the basal diet and carp. A group of 16 on the same ration received 25 mg. of thiamine hydrochloride (vitamin B_1), and 12 foxes received only the basal diet and the carp.

Fatalities in the group receiving no vitamin supplement began on August 1, 20 days after the experiment was initiated. By August 15, seven of the 12 foxes had died from typical Chastek paralysis. In the group of 18 foxes receiving nicotinic acid, two deaths occurred on July 30. By August 18, 11 foxes had died. The group of foxes that received supplements of crystalline vitamin B_1 showed no symptoms of Chastek paralysis, ate normally and remained entirely healthy throughout the experiment, which ended on August 25. The obvious results of this experiment confirmed that Chastek paralysis could be produced by feeding a diet containing 20 per cent frozen carp and established that synthetic thiamine, or vitamin B_1, protects foxes from Chastek paralysis.

THE INACTIVATING FACTOR

It has been determined by Green, Carlson and Evans[11] that the factor in fish which inactivates vitamin B_1 is found in the viscera and in the commercial trimmings, which consist of head, fins, tail, skin and part of the scales. However, it is absent, or at least is not found to any great extent, in the somatic muscle or fillets as used for human food. For this experiment, carp which were freshly seined were immediately cleaned, and the viscera, trimmings, and fillets were frozen in separate containers. Whole fish, uncleaned, was also taken and immediately frozen. Ten foxes each were fed these fish preparations together with a basal diet of the following percentage composition: cereal 15, bread 10, carrots 9.5, cod liver oil 0.5, horse meat and fish 65. Whole carp and the carp fillets were fed as 20 per cent of the diet, and the viscera and trimmings were fed as 10 per cent of the ration. Chastek paralysis first developed in the group given the carp trimmings. Symptoms of the disease and

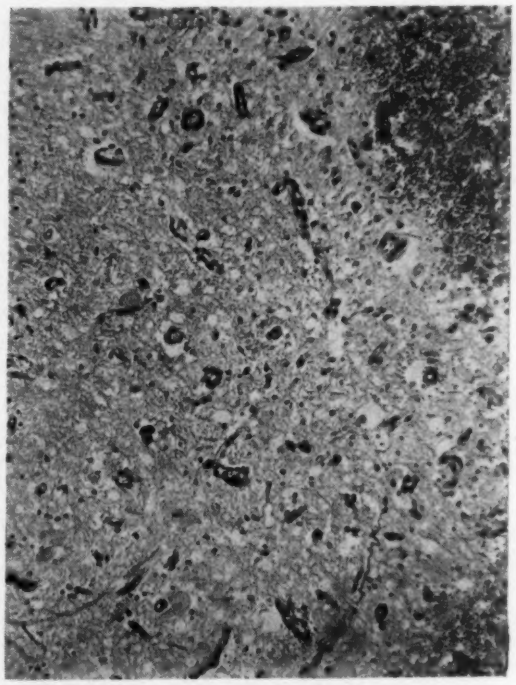


Fig. 3. Medulla (x 200). Increase in size and in apparent number of blood vessels due to tortuosities. Hematoxylin and eosin.

fatalities appeared also in the group of foxes fed the viscera and whole carp, but no signs of the disease appeared in the foxes receiving the fillets. The experiment was terminated when all ten of the foxes given the trimmings and all ten given the viscera had succumbed to the disease. At that time six of ten foxes which had been fed whole carp had died, but the group receiving the fillets remained entirely well. We cannot say that the vitamin-B_1-inactivating factor is not found at all in the fillets, but if present it certainly is in very small amounts. It is seen from this experiment that the feeding of fish viscera and fish trimmings is even more conducive to the development of Chastek paralysis than the feeding of whole carp.

Quantitative Inactivation

In order to determine the amount of vitamin B_1 destroyed by whole, raw, ground carp,[11] five groups of ten foxes each were fed a basal diet containing 20 per cent ground carp as part of the meat ration, with different amounts of thiamine (1, 2, 5 and 10 mg. per fox per day) added to the rations of four of the five groups. Each test was discontinued as soon as symptoms of Chastek paralysis had developed and half of the foxes in the group had died of the disease. The group of foxes that received the basal fish ration but no vitamin B_1 developed Chastek paralysis 28 days after being placed on that diet. The foxes receiving 1 mg. of vitamin B_1 developed Chastek paralysis a week later, and in this group six animals had died when the experiment was terminated. In the group receiving 2 mg. of thiamine the appearance of the disease was delayed a month, but the disease was then very acute and the test was terminated with 5 deaths. In another group, 5 mg. of thiamine failed to prevent the occurrence of symptoms, which developed a month after their manifestation in the controls. These foxes showed inappetence, which varied from day to day, but no severe symptoms of Chastek paralysis. The group of foxes given 10 mg. of thiamine remained entirely well. No symptoms of the disease were seen and no deaths occurred although the animals were held under observation about three months after the beginning of the experiment.

These tests show that one pound of carp, fed as 20 per cent of the ration, destroys as much as 4,400 units of vitamin B_1, with the result that Chastek paralysis occurs in fatal form. The delayed appearance of the disease in the groups of foxes given larger amounts of thiamine indicates that the fish does not destroy all of the thiamine in the ration but appears to destroy it proportionately to the amount which is present. In the group of foxes fed 5 mg. of vitamin B_1, it seems that one pound of carp destroyed the greater proportion of 11,000 units, as mild symptoms of a deficiency developed. It becomes obvious that extremely large amounts of vitamin B_1 would have to be added to a ration to neutralize the destructive properties of the fish, so that it would be futile to add food rich in vitamin B_1 to a ration containing fish in an attempt to counteract the destructive effect of the fish.

In Other Animals

Following our original recognition, in 1932, of Chastek paralysis as a disease of foxes, we observed outbreaks of the same disease on ranches of mink. Frozen, fresh fish is used in diets for mink more generally and in greater amounts than in the case of foxes. Mink appear less prone to develop Chastek paralysis, but severe outbreaks of this disease do occur on mink farms. Ender and Helgebostad,[5] in their description of the disease in foxes, which they termed beriberi, reported its occurrence in mink and also in ferrets on Norwegian fur farms. More recently Wolf[14] has reported a similar condition in cultured fish in fish hatcheries. It would seem that the destructive effect of whole fish on vitamin B_1 can result in a vitamin B_1 deficiency in any species of animal.

Treatment

Treatment of an outbreak of Chastek paralysis must include efforts to alleviate the B_1 shortage of the ranch population as a whole and to cure the individual animals already showing symptoms of a deficiency. Although raw fish fed under cer-

tain conditions is an excellent food, it should be removed from the diet of a stricken herd at once and be replaced by red meat and a proportion of liver to make up about 8 per cent of the diet. Yeast should be added to the ration in a proportion of 3 per cent. A ration which has given good results consists of: fresh muscle meat (horse) 75 per cent, beef or horse liver 8 per cent, hearts 4 per cent, commercial fox cereal 8 per cent, brewers' yeast 3 per cent, eggs 2 per cent. Sufficient milk should be added to secure a desirable consistency of mixture. In a severe outbreak of the disease in which a large proportion of the foxes are showing inappetence and some are showing grave neurologic symptoms, every animal on the ranch should receive an injection of thiamine in a dosage of 3,000 to 9,000 units, depending on the severity of the deficiency, with the injection repeated on the two succeeding days. The sick animals with neurologic symptoms should have very energetic treatment, as death is apt to occur suddenly. Injections of thiamine in dosages of 6,000 to 18,000 units should be given sick animals daily. For individual animals with advanced symptoms, tube-feeding twice a day with milk diluted one-half with water is recommended. If an animal is highly dehydrated, intraperitoneal injections of 100 cc. of normal saline solution should be given. In adult foxes in which neurologic symptoms have developed, the brain is badly damaged by changes in vascular bed and by hemorrhages. Such an animal cannot recover rapidly; intensive treatment may not bring it back to normal for a period of two or three weeks.

PREVENTION

Chastek paralysis occurs only under this very specific condition: All food fed is mixed with fresh, ground, whole fish, so that day after day the inactivating factor destroys the entire intake of vitamin B_1. Only the white muscle meat without the skin can be mixed with food without excessive destruction of the vitamin. Heat destroys the vitamin-B_1-inactivating factor, as evidenced by the extensive feeding of canned fish without the development of outbreaks of Chastek paralysis. The cooking of fish is a logical recommendation for the prevention of Chastek paralysis. However, certain nutritional values are undoubtedly lost by this process. Alternation of rations containing fresh fish with rations containing no fish or containing cooked fish will eliminate the inactivation of all vitamin B_1 fed to an animal over an extended period. The primary recommendation that veterinarians must make to fur farmers is that they do not mix raw, ground fish or fish trimmings with all of the food fed over a period longer than three days.

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Quinine Comes Home

The parent drug, cinchona or Peruvian bark, from which quinine is made is a native of Peru where its specific curative properties were first discovered several centuries ago. The main source of supply in recent decades has been Java where this native tree of South America had been transplanted as an agricultural project. But, this source of supply having been cut off, cinchona tree culture has been greatly revived in Latin American countries: Mexico, Costa Rica, Guatemala, Venezuela. The object is to make the Western Hemisphere independent of the Far East as a source of the drug. It, however, requires from 8 to 10 years to produce a quinine-producing bark. Meanwhile, there will be less quinine available. No bark has yet been harvested from the new seedlings.—*USDA.*

In 1941, the number of slaughterhouses operated under the supervision of the U. S. Bureau of Animal Industry was 649. Approximately 82,000,000 animals were inspected by Bureau veterinarians before and after slaughter. Moreover, this service inspected 10,500,000,000 pounds of canned, cured and processed meat products.

Units of entomologists are being trained to work with the American troops stationed in the tropics.—*From Science.* It has been said that the insects of the world undo the constructive work of millions of men.

The Indispensable Veterinarian

At no conceivable time in the history of this country have the knowledge and services of veterinary surgeons been as necessary as they are today. We are not only a great meat consuming nation but we are the main source and supply of meat for the peoples who are maintaining the battle for freedom against despotism.

"I am sincere when I say to you that from my observation the veterinary profession means just as much to mankind as the medical profession, for in safeguarding the health of animals we are safeguarding the health of man," declared T. Henry Foster before the Eastern Iowa Veterinary association. "Leading doctors of medicine have asserted this from time to time, and as early as 1877, Dr. A. N. Bell said, 'Veterinary sanitary science may well be regarded as the right arm of public hygiene.' . . .

"I am sure I could not have chosen a more opportune time than the present to stress the importance of the veterinary profession. Never before in the history of the country has it been so important to save every domestic animal; and to increase the production of farm animals for defense purposes.

"Eating habits of the nation change very little. The consumption curve of meat goes up or falls, depending on the supply, costs, and the buying power of the consumer; but today many new things about our foods are being discovered, foremost among them, the value of vitamins. New ways of processing meats have been perfected, and we have tenderized hams and beef; quick freezing of perishables brings meat, fish, vegetables, and fruits, commonly called 'quick frozen', more rapidly to our tables, at all seasons of the year, and the refrigerated locker, where individuals can store meats and withdraw them as needed, has been introduced; all contribute to the health and happiness of the people. No other country in the world is so blessed, no other people on earth have their health so scientifically guarded—their comfort so carefully provided for."—*The Journal Stockman.*

Nitrate Reduction in Relation to Oat Hay Poisoning*

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DURING THE LAST decade, several cases where cattle have died as the result of eating oat hay or straw have been reported from Colorado, Wyoming, and South Dakota. Bradley, Eppson, and Beath[1] have found that the toxicity of the oat hay results from its high KNO_3 content and report that animals poisoned by the ingestion of oat hay die from methemoglobinemia. They further report that the reduction of the nitrates in the toxic hay to nitrites occurs in the gastrointestinal tract of poisoned animals resulting in the methemoglobin formation. Sheep, cattle, and horses are all susceptible to poisoning by toxic oat hay,[2] but apparently cattle are the most susceptible. This difference was believed to be due to differences in the ability of the animals to reduce nitrates to nitrites.[3]

A survey made during the summer of 1939 revealed that in several cases the heaviest losses from oat hay poisoning occurred following a rain or a spring thaw, and that in some cases death followed the eating of the oat hay in only a few hours. In view of these facts, J. F. Couch of the U. S. Department of Agriculture, suggested in a personal communication that possibly nitrate reduction might occur before ingestion of the oat hay. It was, therefore, decided to study the possibility of nitrates being reduced to nitrites in oat hay before ingestion.

Accordingly, 5-Gm. samples of ground oat hay and ground redroot hay, both of high nitrate content, were moistened with 15 cc. of water and after standing for a few days at room temperature were diluted to 250 cc. and shaken well. The solutions all showed a high concentration of nitrites. These results are not in agreement with those of Bradley, Eppson, and Beath[2] whose work led them to conclude that there is no mechanism in oat hay for reducing the nitrate.

It was decided that some of the factors which might influence the reduction of nitrates to nitrites in moistened plant material should be studied. A large quantity of redroot (*Amaranthus retroflexus*) having a nitrate nitrogen content of 0.832 per cent was available. It was decided to use this material for the work, assuming that similar results might be obtained with oat hay since in the first study nitrite formation was found in both of these plant materials.

Nitrite nitrogen determinations were made colorimetrically in the following studies by using sulfanilic acid and naphthylamine HCl to develop the color in aliquots of a cold water extract of the plant materials, which had been clarified with neutral lead acetate, and the colors were compared with standards in a Duboscq colorimeter. All results are reported as the per cent of nitrite nitrogen based on the air-dry weight of the plant material used.

EFFECT OF TEMPERATURE

Three separate studies were made to determine the effect of temperature on the nitrate reduction. The general procedure used in the studies was to moisten several 5-Gm. samples of finely ground plant material with 25 cc. of water and then place these samples at various controlled temperature levels. After a definite time period the samples were removed and analyzed for nitrites. By placing several samples at each temperature level and analyzing the samples at various time intervals the rate

*Journal series paper No. 160 of the South Dakota Experiment Station.

A preliminary report on this work was presented at the Cincinnati meeting of the American Chemical Society, April, 1940.

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of nitrite formation was observed. The results of the studies are given in table 1.

A fourth study using oat hay (0.285 per cent NO_3 nitrogen) as well as the redroot hay was made and the results are given in table 2.

The data show that the optimum temperature for rapid nitrate reduction is about 40 C. Following the occurrence of a maximum nitrite concentration there occurred a slow, somewhat irregular decrease in nitrites. At low temperatures nitrite formation was slow, but even at 6 C. it was found that after two weeks time 60 per cent of the nitrates had been reduced to nitrites.

TABLE 1—The Effect of Temperature on Nitrite Formation.

Trial	Incubation, Hr.	NO_2 N at Various Temperatures (%)				
		6 C.	38 C.			
I	15	> .0005	.09			
	24	.....	.26			
	44	> .0005	.65			
	64	.....	.59			
	87	> .0005	.65			
	111	.....	.44			
	133	.0005	.24			
	157	.002	.10			
	181	.007	.01			
	205	.002	.33			
	230	.002	...			
	260	.....	.00			
		15 C.	25 C.	35 C.	45 C.	
II	16	> .001	> .001	.007	.005	
	40	> .001	.003	.0142	.106	
	213	.296	.327	.....	....	
		27 C.	31 C.	35 C.	40 C.	45 C.
III	4	.....	....	....	....	> .001
	15	.....	....	....	....	> .001
	28	.011	.009	.009	.022	....
	39	.017	.017	.034	.178	.178
	48	.036	.075	.061	.223	....

TABLE 2—Formation of Nitrites in Oat Hay and Redroot at Various Temperatures.

Sample		Incubation		NO_2 N %
No.	Kind	Days	Temp.	
1	Oat hay	15	38 C	.016
2	Oat hay	15	25 C	.037
3	Oat hay	15	6 C	.044
4	Oat hay	0	.....	.000
5	Redroot	15	38 C	.446
6	Redroot	15	25 C	.473
7	Redroot	15	6 C	.543
8	Redroot	0	.....	.000

Probable Agent of Reduction

It was assumed, after the first studies made, that bacteria caused the reduction of the nitrates to nitrites. The following experiment was performed and its results support this conclusion.

One-Gm. samples of redroot (0.832 per cent nitrate nitrogen) were weighed into each of 12 large test tubes. The test tubes were graduated at 50 cc. Test tubes 1 through 8 were stoppered with cotton plugs and then autoclaved for 30 minutes at 20 pounds pressure. The other 4 test tubes were not autoclaved. Five cc. of sterile water were then added to each test tube and they were placed in an incubator at 38-40 C. At 96 hours, a small amount of unautoclaved redroot was added to sample 8 and the sample was mixed with a sterile needle and incubated again. At the times indicated in table 3, the tubes were made up to 50 cc. with 0.5 per cent neutral lead

acetate solution and aliquots were analyzed for nitrites after shaking well. The results of the study are given in table 3.

An organism capable of rapidly reducing nitrates to nitrites was isolated from the redroot. It was found to be *Bacillus subtilis.*

TABLE 3—Effect of Sterilization on Nitrite Formation.

Sample		Incubation, Hr.	Nitrite N %
No.	Treatment		
1	A-C	24	Trace
2	A-C	72	.000
3	A-C	96	.000
4	A-C	192	.000
5	A-C	24	.001
6	A-C	72	.000
7	A-C	96	.000
8	A-C*	192	.500
9	None	24	.125
10	None	72	.470
11	None	96	.501

*Then inoculated at 96 hours.
A-C = autoclaved.

Effect of pH

Preliminary studies on this phase of the work indicated that the optimum pH for rapid reduction was above 7.0. In a subsequent study, 5-Gm. samples of the redroot were weighed into each of several flasks. Thirty-five cc. of a buffer solution was measured into each flask and mixed with the sample and the mixture was then placed in an incubator at 36 C. At different time intervals the samples were removed, the pH of the mixtures determined with a glass electrode, and finally all of the mixture, including that used in the pH determinations, was transferred to a 250 cc. flask with 200 cc. of water, treated with lead acetate, diluted to volume and shaken well. Aliquots were analyzed for nitrites as described before. At the outset, original pH values for the mixtures were determined on one set of samples prepared in a similar manner after mixing well and allowing it to stand for 30 minutes in the refrigerator. The results of this study are given in table 4.

Study of the data in table 4 shows that at pH values above, the reduction of nitrates to nitrites is rapid. Below pH 5.0 the accumulation of nitrites does not occur and below pH 6.0 it is very slow. The optimum pH for rapid nitrite formation appears to be between 7.0 and 8.0.

In figure 1 are shown the results of two studies on the rate of the formation of nitrites under approximately optimal conditions of pH and temperature. Eighty Gm. of redroot was placed in a liter flask which contained 650 cc. of a buffer solution composed of mono- and tripotassium

TABLE 4—The Effect of pH on the Rate of Nitrite Formation.

Buffer Used	pH of Buffer Used	pH of Mixture (Original)	pH of Mixture at				% NO_2N in Mixture at			
			10 Hr.	20 Hr.	40 Hr.	60 Hr.	10 Hr.	20 Hr.	40 Hr.	60 Hr.
None	....	5.6	....	4.9	4.3	4.6	....	.015	.007	.105
K-acid phthalate	4.1	4.7	....	4.7	4.7	4.7	....	.000	T*	.000
K-acid phthalate	4.7	4.9	....	4.9	4.8	4.7	....	.000	T	.000
K-acid phthalate	5.2	5.2	....	5.2	4.6	4.9	....	.000	T	T
K-acid phthalate	5.8	5.6	....	5.4	4.8	4.9	....	.010	.004	.002
KH_2PO_4-K_2PO_4	6.2	5.9	....	5.3	4.9	4.9	....	.016	.014	.009
KH_2PO_4-K_2PO_4	6.7	6.4	6.2	6.2	6.2	6.2	.167	.120	.055	.064
KH_2PO_4-K_2PO_4	7.6	7.4	7.0	6.6	7.0	7.0	.029	.150	.300	.533
KH_2PO_4-K_2PO_4	8.6	7.7	7.3	6.9	7.0	....	.029	.381	.364	....
KH_2PO_4-K_2PO_4	9.3	7.7	7.4	7.0	7.2	7.8	.012	.422	.400	.480
KH_2PO_4-K_2PO_4	10.1	7.7	7.3	6.9	7.2	....	.093	.373	.444	....
KH_2PO_4-K_2PO_4	10.6	7.8	7.5	6.9	7.1	7.7	.026	.400	.421	.505
KH_2PO_4-K_2PO_4	11.2	8.4	7.9	7.2	7.5	8.6	.007	.280	.485	.565
KH_2PO_4-K_2PO_4	11.6	10.5	7.7	7.1	7.5	9.2	.006	.300	.410	.565
KH_2PO_4-K_2PO_4	12.0	11.4	9.5	7.7	7.7	9.7	.000	.200	.465	.518

*T Less than .001.

phosphate and having a pH of 7.6. The mixture was kept at a temperature of 37.5 C. and was stirred slowly with a motor stirrer. At intervals as indicated in figure 1, portions of the mixture were removed and some of the liquid was separated by filtration. Five-cc. portions of the solution were treated with 3 or 4 drops of saturated lead acetate (neutral), made up to 50 cc., and analyzed for nitrite nitrogen. The pH of the mixture remained between 7.0 and 7.2 during the experiment. See figure 1.

CONCLUSIONS

The reduction of nitrates to nitrites in redroot of high nitrate content occurs under varied conditions of temperature when the material is wet. The reduction is rapid at higher temperatures, but even at temperatures around 6 C. nitrite formation occurs and over longer periods of time considerable amounts of nitrites accumulate. That nitrites formed prior to ingestion of high nitrate forages may cause livestock poisoning lacks direct experimental evidence, but it appears that this may be possible in some cases.

In view of the data obtained on the effect of pH on nitrite formation and on the pH of the gastrointestinal tract of cattle,[4] it appears that differences in susceptibilities of animals may result in part at least from differences in the pH of the rumen contents. Normally, the pH of the rumen contents of cattle is such that nitrate reduction would occur rapidly, but occasionally it may be low enough to retard the formation of nitrites.

The rate of reduction of the nitrates in studies *in vitro* is apparently quite similar to the rate of reduction in the rumen of cattle since usually death follows ingestion of high nitrate hay by 8 or 10 hours. It is believed, therefore, that the agent of reduction in the rumen as well as *in vitro* is *B. subtilis.*

SUMMARY

When plant material of high nitrate content is dampened, the nitrates may be reduced by bacterial action over a wide range of temperatures. The most rapid reduction occurs at temperatures around 40 C. and at pH levels between 7.0 and 8.0. The microörganism most important in the reduction is probably *Bacillus subtilis.*

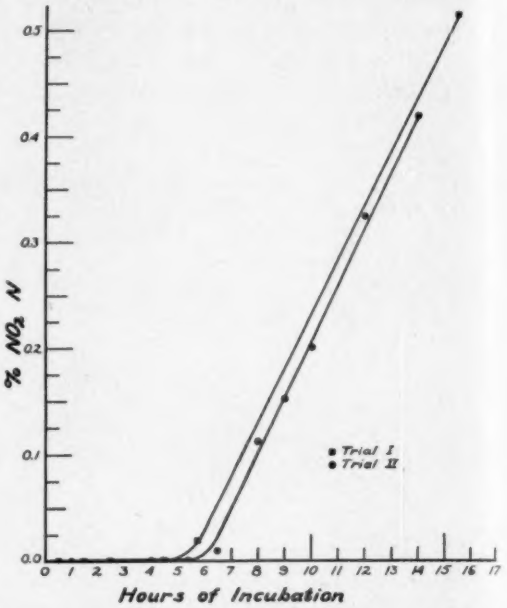

Fig. 1. The rate of nitrite formation in wet redroot at near optimum conditions of temperature and pH.

Peddlers of chicken remedies have applied for the right to purchase tires under the regulations applying to the veterinarians practicing among farm animals. Aside from the generally acknowledged fact that chicken-disease remedies are of little value in the absence of properly conducted diagnostic methods, the veterinary profession is interested only in having the concession made under the name of *medicine peddler* and not of *veterinarian.*

Regardless of the international situation, more than 19,000 breeding farm animals were imported into the United States last year. The U. S. Bureau of Animal Industry issued certificates of pure breeding for 14,594 cattle, 3,400 sheep, 299 horses and 71 hogs imported during the year.—*USDA, Dec. 17, 1941.*

[4]Monroe, C. F., and Perkins, A. E.: A study of the pH values of the ingesta of the bovine rumen. J. Dairy Sci., xxii (1939), pp. 983-991.

Biochemic Aspects of Canine Nutrition*

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THE DOG'S NUTRITIONAL requirements have been more widely studied than those of any other species. After about 1910, the rat and the chicken became the common animals in nutrition laboratories but even today the dog is used extensively. Much basic knowledge that can be used today has been available for nearly a hundred years.

In 1842, the French physiologist, Magendie, found that dogs lived longer on dark bread made from whole grains than upon white bread. This was the beginning of our knowledge that dogs need the B vitamins. He also observed that dogs on certain diets developed sore eyes. Today, we realize that his reports fit dogs suffering from vitamin A deficiency. His observations can be read with profit. He found that dogs survived for considerable periods on gluten, the protein from wheat. We can ask today if wheat proteins are especially well suited to the dog.

Probably the most extensive work ever devoted to dog nutrition is the 300-page book of Bischoff and Voit entitled "The Nutrition of Carnivora", published in 1860. Although much of it was written about experiments on but one dog, the information is sound and some of it has general application today in studies of nitrogen balance.

In selecting information to apply in the feeding of dogs, which information should be selected, that gained from a million rats or from one dog? My answer is that if it concerns the proper feeding of one dog I would choose that information. But if no information concerning one dog were available I would resort to that obtained from the rat and pray that it would hold for dogs. This does not mean that the rat is not useful in research on dog feeds. The rat serves well for the test animal, for example, in determining how much vitamin B_1 there is in meat scrap after meat has been processed, and is an excellent animal for telling how rapidly a feed loses its vitamin A when left in warm storage. The rat can even help in rejecting inferior rations but in the last analysis the requirements of dogs must be measured by experiments on dogs. It is discouraging to read articles on nutrition of dogs that devote most of their space to rat nutrition as if this applied to the dog without reservation.

The discoveries of Bischoff and Voit bear directly upon our problems today. They found that dogs utilized bread as effectively as man, depending upon the amount of cellulose it contained. The coarse whole-grained breads were better for the sustenance of the dog for long periods but the percentage utilized was less since the dog, like man, could not digest cellulose well. However, these studies did show that the dog digested cooked starch and the other components of bread just as man does. These early findings that dogs utilize cooked starch, sugar and other carbohydrates have never been challenged in experiments conducted in nutrition laboratories and they have been confirmed frequently. However, there are a large number of people who still believe dogs can not digest starches and sugars.

The starch problem that is still debatable concerns raw starch. There is no doubt that such animals as rats and chickens make about as good use of raw starch as they do of cooked starch. It is known, however, that man gets into trouble by consuming large amounts of raw starch, especially potato starch. In any rural audience where dog nutrition is discussed, invariably someone will remark that his dog delights in and thrives on the laying mash fed to chickens. This mash contains a liberal amount of raw starch. On the other hand, when one feeds dogs large amounts of raw starch in balance trials, usually rather severe diarrhea results.

This leads one to wonder if the farm dog

*Read before the Section on Small Animals, 78th annual meeting AVMA, Indianapolis, Ind., Aug. 13, 1941.

that exercises a lot may not be able to tolerate raw starch without injury while the apartment dog gets into trouble. Another question asked at the kennel club meetings concerns the feeding of potatoes. If the remainder of a dog's diet is adequate in protein, minerals and vitamins I do not believe that potatoes affect him any differently than they do his master. If the rest of the dog's diet is adequate there is no reason why carbohydrates should not provide the sources of energy.

Some companies have tried to promote glucose as a constituent of dog feeds on the ground that working dogs need a rapid source of energy. No evidence has been presented for this thesis and there is no reason to believe that glucose has any more value in a dog feed than cooked starch.

In commercial dry dog feeds today the chief sources of carbohydrates are corn flakes and wheat flakes. The dog utilizes both of these satisfactorily.

The question of whether dogs can digest carbohydrates is commonly asked at kennel clubs. In fact, a woman at one meeting told us that she had heard the dog had no pancreas and therefore could not digest starch. The reply was that the discovery of insulin was made by virtue of the dog's pancreas.

From time to time questions arise concerning the ability of dogs to utilize fats. The dog can use the same fats as man. Since most dry dog feeds are low in fats they probably should be supplemented with fats from time to time. The reason they are so low is that rancidity tends to develop when constituents rich in fat are used. Furthermore, feeds containing 10 per cent or more of fat cause trouble in packaging because the fat tends to stain paper containers.

The dog's requirement in protein seems to be similar to that of the rat, although the study of the dog in recent times has not been intensive. There is no reason to doubt that the dog is able to utilize both plant and animal proteins effectively. We have fed dogs for periods of three months on diets containing 15 per cent of soybean meal with no signs of injury. Many of the dry dog feeds contain 5 per cent or more of soybean meal, and some of the producers employ considerable amounts mixed with meat.

As to an exclusive meat diet for dogs, one is often confronted with the statement that the dog is carnivorous and, therefore, should be fed a diet of hamburger. Of course, the dog loves meat. A child loves candy but we do not nourish children on candy. Muscle meats are deficient in several factors, notably calcium and vitamin A. The so-called carnivorous dog in nature will eat a rabbit rather completely, including the intestine, some of its content and the liver. He thus balances his diet.

There is no reason to maintain dogs on exclusive meat diets. A dog does well on the energy furnished by carbohydrates of plant source if part of the protein is furnished by meat and some by milk products such as dried skim milk or dried whey.

Most of the mineral requirements of dogs are supplied in the form of bone meal. Here, the dog gets its calcium, phosphorus and magnesium. Most feed mixtures contain 1 per cent or more of bone meal. Some of the canned dog feeds are mere mixtures of ground bones, meat and some plant product such as soybeans with small amounts of vitamin supplements.

Undoubtedly, there is much money being wasted by dog-feed manufacturers, kennels and dog owners on special mineral mixtures and tablets of such inorganic substances as calcium phosphate and potassium iodide. As you are aware, there is great need for the Food and Drug Administration to take an active hand in this field. There should be an agency to suppress unwarranted claims in advertising, just as there is for materials sold for human consumption.

Dogs are known to need the same vitamins as man with the exception of "C". Dogs do not get scurvy when fed diets deficient in this vitamin. It is commonly believed that only man, the monkey and the guinea pig need this vitamin in their diets.* From time to time there are articles in the

*Workers at the University of Wisconsin demonstrated that asoorbic acid steps up the virility of bulls.—Ed.

popular dog magazines selling this vitamin to the public.

Most dry dog feeds contain such supplements as wheat germ meal, yeast and dry skim milk to provide vitamin B fractions. They are usually quite adequate. However, there is a real need to study the effect of processing upon the destruction of B_1 in meat meals. Most of the values for this vitamin in meat are based upon the fresh meat and today we know little about their decrease in cooking. The heat treatment of meat meals is far more severe and there is a real need for meat meals that have been processed so that they retain a maximum of their vitamins.

The fat-soluble vitamins afford a more difficult problem in dog nutrition. When dog feeds are mixed, vitamin A is usually put into them in two forms. (1) Some form of fish oil such as cod liver oil or shark liver oil and (2) some plant source of carotene such as 1 per cent of alfalfa leaf meal or a small percentage of tomato pomace are usually added to the mixture. Unfortunately, both vitamin A and carotene are readily destroyed by oxidation. The destruction is accelerated when feed is stored in warm rooms. It is catalyzed by such ingredients of mineral mixtures as iron and copper. Other factors, such as rancid fats and even carbohydrates may increase the destruction. A thorough study of the rate of destruction of "A" in dog feeds has not been made but there is great need of it. In fact, I wonder if it would not be better for consumers to learn to feed supplements to their dogs rather than to try to sell so much ready mixed vitamin A. Why shouldn't the dog owner feed some cod liver oil, ground carrots or lettuce weekly?

The usefulness of vitamin E to the dog is still a question, but developments of the past few years indicate that many species need this vitamin not only for reproduction but also for the maintenance of muscle tissue. From the trends of research on vitamin E, I believe it will ultimately be found essential in dog nutrition. This vitamin is more stable than "A" but it is readily destroyed if left too long in contact with unsaturated fats, such as cod liver oil. Dogs can get "E" from lettuce, liver, tomato pomace, carrots or carrot oil, and wheat germ.

The general trend today is to furnish vitamin D in the form of irradiated yeast. There are still many unsolved problems concerning the need of larger breeds for this vitamin.

After this brief summary of dog nutrition some special problems can be considered. In the biochemical field there is need for attention to the following:

1. The interplay between minerals and vitamin D in the larger breeds, such as Great Danes. In the past students of nutrition have failed to appreciate the possible difference between a small breed such as the Toy Manchester, and the Dane. Voit pointed out that large dogs got rickets on the same diet that prevented it in the small breeds.

2. The heat treatment essential in the processing of plant products such as wheat flakes, corn meal, corn flakes and soybean meal. How much toasting is essential to produce starch in a form most available to dogs? How much heat treatment is needed to make the proteins of soybeans available to the greatest extent?

3. As to the palatability factors in dog feeds, what factors in the taste of feeds appeal to the dog and how far can one succeed in making the dog eat what it should by adding what it likes?

4. The study of intestinal gases and the odor of feces. Prior to 1880, there were already a number of excellent studies in this field but new ones with modern techniques are needed to determine which factors modify intestinal gas formation.

5. In regard to the control of the hardness of the feces and diarrhea, early experimenters used high levels of bone ash to keep the feces hard. Their studies never ran long enough to determine if such practices ultimately injured the dog. In modern times, we have been experimenting with substances containing considerable pectin, such as the residues from the production of tomato juice and grapefruit juice. Tomato pomace and grapefruit pomace both seem to assist in promoting normal fecal formation. Tomato pomace can be produced in larger amounts if the market demands it. This material is especially worth while because it contains a considerable amount of fat-soluble vitamins A and E, as well as pectin. Citrus pomace is relatively low in vitamins but this could probably be made with some vitamin A if more care were exercised in drying it. As

you will recall, orange peel contains a considerable amount of vitamin A.

6. Meat meals and bone meals could both be prepared in better forms if more attention were given to the matter. As you are aware, a dog digests fresh meat almost entirely. In fact, some of the studies have shown that dogs fed fresh-meat diets need to defecate only at intervals of several days. In contrast to this, meat meals are only about three fourths utilized. Whether this is due to the high content of fibrous material or to overheating the protein is not known. Probably about a fourth of the value of the meat meal is lost. In the case of bone meals, it is a product that dogs will not eat if given a free choice, but everyone appreciates the dog's love for fresh bones. The production of a palatable bone meal is needed.

7. In respect to the utilization of plant proteins by dogs, in spite of the extensive use of such products as soybean meal in feeding dogs, and other protein concentrates such as gluten meal, relatively little research has been done. In our studies, we have found that soybean meal may comprise 15 per cent of the diet, if it is otherwise balanced.

8. The chemical balance method should be more extensively used in dog nutrition. We have recently been running balances on dogs of very different types, namely: Bassets, Salukis, German Shepherds and Cairn Terriers. To date, the evidence indicates that these breeds utilize the same mixture of dry feeds to about the same extent.

The great need is for dog feed manufacturers to spend part of their funds in genuine research of high quality, instead of using the free information derived from research and expending so much of their funds in advertising. There is no reason why the dog-feed industry should not spend 2 to 4 per cent of its income in research as other progressive industries do.

To keep abreast of developments in nutrition, the following three sources of information are worth remembering: (1) the technical literature, such as the *Journal of Nutrition and Nutrition Abstracts and Reviews*. Possibly *Biological Abstracts* will soon undertake a section devoted to the nutrition of pets. (2) Your committee on foods. If this committee can not answer your questions you may be sure that they can refer you to the right specialists in the field of nutrition. (3) Special technical bulletins such as the one we have issued.

Farmers and Labor Unions

It is rumored that farmers are about to join up with the CIO *vel al.* When and if this comes about both groups may learn a lot about which they never dreamed, smart as unions are in throwing the monkey wrench into the other fellow's machine. There will be a lot of ground for the goons to picket and disputes galore to iron out in a jack-of-all-trades business like farming. It can't be done, fellows. You don't know one another nor one another's job. How about fixing the fence when the cows

Lewis in *The Milwaukee Journ*

get in the cornfield? It takes carpenters, iron workers and pick and shovel men to do the job and while the union goes into a huddle to say who'll do it, the cows will eat up a lot of corn.

But what we're thinking about are the poor fellows marching up and down between two boards telling the world the farmer's unfair, without knowing much about the business end of a pitchfork. He who thinks that farmers will ever give up a speck of their independence to the goons is plumb crazy. The farmer was here first and he never got soft.

If you teach a man you write on water; if you teach a boy you carve on marble. —*Quoted by The Extension Animal Husbandman.*

Physiologic and Metabolic Aspects of Acetonemia in Cattle*

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SINCE THE REPORTS of Sampson, Gonzaga and Hayden[1] and Hayden, Fincher and Sampson[2] in 1933 on acetonemia in cattle, an ever increasing amount of research has been done on this disease. This is in keeping with the increased economic importance of the disease during the past ten years.

Acetonemia is seldom a parturient but usually a post-parturient disease of well-nourished high-producing dairy cows of all ages, characterized by a hypoglycemia, acetonuria and acetonemia. The acetone or ketone bodies found in the blood and urine are acetone, aceto-acetic acid and beta-hydroxybutyric acid.

The Ross test for urine ketones as described by Udall[3] has proved an important diagnostic aid in the diagnosis of acetonemia. The purple color which develops with this test on positive urine samples is due largely to the presence of aceto-acetic acid, since acetone is usually present only in small amounts and beta-hydroxybutyric acid does not produce a color with the reagents used in the test. The intensity of the color produced is roughly proportional to the concentration of ketones present when the concentration is low, *i.e.*, below 100 mg. per 100 cc. The color intensity may be graded from a one plus for slight purple color to a four plus in which it is impossible to see through the solution when the test tube is held to the light.

Before considering the present concept of carbohydrate and fat metabolism in relation to acetonemia, it is desirable to point out five rather well-established facts with respect to this disease in cattle. These are:

1. The more severe cases of acetonemia, which continue for 3 or 4 weeks and require a number of intravenous dextrose injections to keep them going along reasonably well, occur usually from 10 days to 6 weeks after calving. Such cows are usually high-producing cows and the disease occurs at a time when the stimulus for milk production is at its maximum. At this time there is a tendency for a cow to utilize more energy for milk production than can be replenished by the amount of food she is able to consume and digest. High-producing cows during the early lactation period usually draw on their carbohydrate and fat reserves and show a weight loss.

2. A low blood sugar level is another important finding in the more severe cases. The severity of the clinical symptoms, especially the nervous reactions, muscular incoördination and depression, follow rather closely the degree of hypoglycemia. Nervous reactions and muscular incoördination usually do not appear until blood sugar levels are reduced to about one-half that of normal. Nerve cells use only carbohydrates as a source of energy, and, therefore, suffer quickly when a low blood sugar level develops. The prompt improvement frequently observed after the intravenous administration of dextrose also serves to illustrate the close relationship between hypoglycemia and some of the clinical symptoms.

3. High concentrations of ketones are found in the blood and urine. The severity of the clinical symptoms does not parallel closely the blood ketone concentration. Cows with high blood ketone values do not necessarily show muscular incoördination and nervous reactions, unless the blood sugar values are low, as mentioned above.

4. Fatty livers are observed frequently on postmortem examination of cases of severe ketosis.

5. The greater portion of the cases occur during the months of December to April or May.

In regard to carbohydrate and fat metabolism, time will permit only a brief summary of the more important results obtained during the past few years in this field of study which may have direct or

*Paper No. 1922, Scientific Journal Series, Minnesota Agricultural Experiment Station. Read before the Section on Research, AVMA, Indianapolis, Aug. 13, 1941.

†Division of Veterinary Medicine, University Farm.

[1]Sampson, J., Gonzaga, A. C. and Hayden, C. E.: The ketones of the blood and urine of the cow and ewe in health and disease, Cornell Vet., xxiii (1933), pp. 184-207.

[2]Hayden, C. E., Fincher, M. G. and Sampson, J.: Acetonemia, and acetonemia with parturient paresis, Cornell Vet., *Ibid.*, pp. 368-376.

[3]Udall, D. H.: The Practice of Veterinary Medicine, First Edition (1933), p. 139.

indirect bearing toward a better understanding of acetonemia. The more recent investigations in this field of study have necessitated a considerable revision of our previous concept of carbohydrate and fat metabolism. The more important recent findings in the field of carbohydrate and fat metabolism are:

1. The liver is responsible for the control of the blood glucose level. If more carbohydrates are ingested and absorbed than can be utilized immediately, the sugar is stored in the liver and muscle as glycogen or animal starch. The liver may also convert 60 to 70 per cent of the protein ingested into sugar and may convert excess sugar into fat, which is then transported by the blood for deposition as body fat. When glucose is needed to maintain the glucose level of the blood, the liver glycogen or animal starch is converted to glucose. There is indirect evidence, though not entirely conclusive, that the liver may convert fats to glucose.

2. For a number of years it was thought that insulin was necessary for the tissue to utilize glucose. The high blood sugar level, glycosuria, and finally death of animals from which the pancreas was removed was considered as being due to the inability of the body to utilize sugar in the absence of insulin. However, during the past 6 or 7 years a number of investigators have shown that if both the pancreas and the pituitary glands are removed, the animals are able to live in a fairly satisfactory manner with a nearly normal blood sugar level. Such animals may be made diabetic by the injection of pituitary gland extracts and be made to show hypoglycemia with very small doses of insulin. In the light of these studies, we must consider the liver as being able to regulate the blood sugar level without the aid of the pancreas and the pituitary gland. However, the liver is able to maintain the blood sugar level at a more constant value when large amounts of carbohydrates are ingested or when the body needs large amounts of carbohydrates for energy, if the pancreas and pituitary are intact. The pancreas and the pituitary gland produce hormones which are antagonistic in their action on the liver and assist the liver by stimulating or inhibiting the various functions of the liver in the rôle of regulating the blood sugar level. Insulin stimulates the conversion of sugar to glycogen and to fat and apparently has very little effect on the utilization of sugar by the body tissues, contrary to some of the previous concepts in regard to the action of insulin. Hormones from the pituitary gland stimulate the production of glucose from glycogen in the liver, the conversion of protein into sugar, and stimulate the adrenal gland to produce hormones which also act to increase the blood sugar level.

3. Animals made diabetic by the removal of the pancreas, utilize or oxidize as much glucose as a source of energy as does a normal animal. Therefore, we must view a diabetic state of this type as not due to the failure of the body to utilize sugar in the absence of insulin, but rather as an overproduction of sugar by the liver under the stimulus received from the pituitary and cortico-adrenal hormones.

4. Ketone or acetone bodies are produced almost entirely, if not entirely, by the liver from fats. For many years the oxidation of fatty acids derived from fats was considered to take place by the oxidation and splitting off of two carbon atoms at a time from the long fatty-acid chain, the two carbon groups then being oxidized to carbon dioxide and water. By splitting off two carbon compounds in this manner, the whole fatty-acid molecule was eventually oxidized completely to carbon dioxide and water. It was believed that carbohydrates must be oxidized simultaneously with the oxidation of fats. When insufficient carbohydrates are being oxidized, it was thought that the oxidation of fats could go on only to the four-carbon chain residue of aceto-acetic acid and beta-hydroxybutyric acid. These ketone bodies were considered as toxic incomplete oxidation residues of fat metabolism. This gave rise to such sayings as "Fats burn only in the fires of carbohydrates and when the latter are deficient the body 'smokes' with unburnt fats, *i.e.*, ketones." In the light of more recent studies on fat metabolism, such a view is no longer tenable.

The pituitary gland yields a hormone which stimulates the liver to convert fat to ketone bodies, *i.e.*, aceto-acetic acid and beta-hydroxybutyric acid. Evidence has been presented by various workers that the liver may produce two or possibly four molecules of ketones for each molecule of fatty acid metabolized, in place of one molecule of a ketone body for each molecule of fatty acid as was the earlier view.

Under conditions of insufficient carbohydrates as a source of energy, the animal body may derive from 60 to 80 per cent of its energy from the oxidation of ketone bodies. Evidence that the rate of utilization of ketone bodies as a source of energy is independent of the amount of carbohydrates being oxidized has also been obtained. Thus, it would appear that the liver produces large amounts of ketone bodies from fats for the body to use as

energy when insufficient carhohydrates are available to supply the energy requirements.

On the basis of the evidence available, it would seem more nearly correct to view the production of ketone bodies by the liver as one of the normal reserve mechanisms for supplying the body with energy, when carbohydrates do not fulfill that need entirely, rather than the previous view that ketones are toxic end-products of incomplete fat oxidation.

I would like now to consider ketosis or acetonemia in cattle in the light of the present views on carbohydrate and fat metabolism mentioned above. If the production of ketone bodies by the liver is considered a normal reserve mechanism for utilization of fats by the body for energy when not enough sugar is available, then one would expect any cow, especially the high-producing cow, to show a positive nitroprusside test if she goes off feed or is not able to consume and digest enough food for her energy requirements. There are reports in the literature, as well as our own experiments, which support this idea.

Bullard[4] reported a study of 55 cows in a college dairy herd from the middle of February to the middle of April. A total of 589 nitroprusside tests were made. Thirty-one of the 55 cows gave one or more positive tests for ketone bodies, with only six of the 31 cows manifesting visible clinical symptoms.

Sykes, Duncan and Huffman[5] reported a study in which urine specimens from over 1,500 cows were tested by the nitroprusside test. Of the cows tested, 456 showed a four plus Ross test. Many others, of course, showed a one plus, two plus or a three plus reaction. Total blood ketone values were determined on blood specimens collected from the 456 cows showing a four plus nitroprusside urine test. Of the 456 cows, only 36 showed total blood ketones over 10 mg. per 100 cc. Of the 36 cows, only four showed clinical evidence of ketosis as evidenced by lowered milk production, lack of appetite, etc. These four clinical cases showed blood ketone values ranging from 29 to 89 mg. per 100 cc. and urine values between 338 to 1568 mg. per 100 cc. The blood sugar values were about one-half that of the normal. Therefore, out of the 456 which showed a four plus Ross test, only four showed what might be termed a severe or primary ketosis.

On the basis of the above reports, one might be justified in saying that a positive Ross test is the rule rather than the exception, especially during the winter months. Most of the cows which give positive nitroprusside tests do not show blood ketone values above 10 mg. per 100 cc. nor urine values above 75 per 100 cc. Many such cows will even give four plus nitroprusside tests. The main objection to the nitroprusside or Ross test is that it does not distinguish between a mild ketosis, caused by the animal going off feed because of complications such as milk fever, metritis, retained placenta, peritonitis, foreign body, change in diet, etc., and the presence or development of a severe ketosis, with blood ketone values above 20 mg. per 100 cc. and urine values above 100 mg. per 100 cc.

Possibly the value of the nitroprusside test as a diagnostic aid might be extended or modified to render possible the classification of acetonemia or ketosis as a mild or secondary ketosis compared to a severe or primary ketosis. If the test as now used shows a strong reaction, the test might be repeated, except that 0.5 cc. of urine plus 4.5 cc. of water be used in place of the undiluted urine. If the reaction is still very strong, *i.e.*, a three or four plus, it would seem justifiable to consider the case as a severe ketosis. If such a distinction were possible, it no doubt would be of considerable value as an aid in diagnosis, as well as in the treatment and management of the animal.

A positive nitroprusside test may be considered as an indication of the utilization of fairly large amounts of fat and a deficiency in carbohydrates available for metabolism. Since the immediate cause of

[4]Bullard, J. F.: 1939, Acetonemia—observations on clinical and nonclinical cases, Cornell Vet., xxix (1939), pp. 377-383.

[5]Sykes, J. F., Duncan, C. W. and Huffman, C. F.: Blood sugar and carbon dioxide combining power of the plasma in relation to ketosis in dairy cattle, J. Dairy Sci., xxiv (1941), pp. 193-197.

the ketosis seems to be a carbohydrate deficiency, treatment of such animals, especially cases with a typical severe ketosis, should be directed toward increasing the carbohydrate supply by intravenous dextrose, very generous amounts of molasses or refined corn sugar* on the feed, orally via a stomach tube, or by any means that may be used to get the animal back on feed.

Shaw and Powell[6] reported that "the intravenous injection of glucose in most cases of severe ketosis usually produces a small decrease in blood and urinary acetone bodies for a few hours followed by a rise in acetone bodies often back to the previous level. Pumping from 6 to 10 pounds of glucose into the rumen by means of a stomach tube results in a much greater rise in blood glucose over a longer period of time and causes a marked fall in blood and urinary acetone bodies." In some cases the blood acetone bodies decreased to within the normal range of 3 or 4 mg. per 100 cc. within 24 to 48 hours. "However it was found necessary in all cases where the ration was not changed to continue some type of glucose therapy at a rather high level for several weeks. In those cases where the animal had a fairly good appetite, it was possible to alternately cure and then reproduce severe ketosis merely by feeding three pounds of glucose per day for a few days followed by removal of glucose from the ration."

Although the immediate cause for the severe ketosis appears to be a marked carbohydrate deficiency, there is no definite information as to the underlying or fundamental cause. Considerations along this line are rather speculative. However, there seem to be two general lines of attack on the problem. First, there is the question of a possible deficiency of the liver in its function of maintaining blood glucose levels. Such a deficiency may be the lack of conversion of proteins to glucose and possibly the conversion of fats to glucose. This might be due to lack of adequate stimulation of the liver by the pituitary and adrenal or other endocrine glands. The report by Fincher and Hayden[7] on the use of the anterior pituitary gland extract for the treatment of acetonemia gives a suggestion along this line. Second, the cases of severe ketosis usually develop during the winter and early spring. This would appear to be a definite indication of a nutritional factor or factors in the etiology of the disease. Sykes, Duncan and Huffman[5] have suggested that the rations ordinarily fed dairy cattle in winter contain only sufficient readily available carbohydrate to meet ordinary requirements and not enough to meet the additional demands on carbohydrate for milk production. This, they believe, is indicated by the high percentage of cows which give a positive Ross test and do not show clinical symptoms. Another nutritional phase which needs study is the possibility of vitamin deficiencies. The vitamins not only influence general metabolism, but also give rise to endocrine disorders when deficiencies develop.

SUMMARY

1. The large amounts of ketone bodies in the blood of animals showing ketosis should not be considered as toxic incomplete oxidation products of fat metabolism, but should be considered as one of the normal means of utilization of fats for energy when sufficient carbohydrates are not available.

2. Many high-producing dairy cows give a positive Ross test for urine ketone bodies during the winter months, whereas only a relatively small percentage of such cows show clinical symptoms of severe ketosis.

3. The usefulness of the nitroprusside or Ross test for acetonemia may be greatly extended in cases where a positive test is obtained if it is repeated with a 1:10 dilution of the urine. Animals with a severe ketosis usually show a three or four plus reaction with a 1:10 dilution of urine. In

*Dextrose or refined corn sugar may be obtained from Clinton Co., Clinton, Iowa, and Corn Products Refining Co., 17 Battery Place, New York City.

[6]Shaw, J. C. and Powell, R. C., Jr.: Glucose therapy in ketosis in cattle. Abstract. J. Dairy Sci., xxiv (1941), p. 503.

[7]Fincher, M. G. and Hayden, C. E.: The anterior pituitary lobe hormones in the treatment of ketosis in the dairy cow, Cornell Vet., xxx (1940), pp. 197-216.

South La Salle Street, Chicago

The Chicago Board of Trade Building is in the background, on top of which is the monument of Ceres, the goddess of agriculture. In this building a large percentage of American farm products finds markets throughout the world.

(*Continued from preceding page*)

this manner it is possible in most instances to distinguish between a mild or secondary ketosis, and a severe or primary ketosis.

4. The high ketone and low glucose levels of the blood in cases of severe ketosis indicate a carbohydrate deficiency and suggest the administration of liberal amounts of dextrose intravenously or orally.

Survey on Dog Feeding: Part II*

THE FIRST REPORT on the survey on dog feeding appeared in the January 1942 issue of the JOURNAL. To correct certain misconceptions, a further analysis of questions two and three in the survey reveals the necessity for providing the veterinarian with more detailed information. Questions two and three were as follows:

> Question 2: Do you believe that the inspection and approval of dog food is a veterinary problem?
>
> Question 3: What criticisms or suggestions do you have?

In replying to these questions a number of veterinarians revealed that they were unfamiliar with certain of the functions of our federal government, particularly the Bureau of Animal Industry, the Food and Drug Administration, and the Federal Trade Commission, as these bureaus are related to the dog food industry and to the Dog Food Testing Program sponsored by the veterinary associations.

The Committee received 577 replies to these questions. Of these:

> Sixteen stated that the control of dog food was purely a Bureau of Animal Industry problem.
>
> Thirty-five, however, were of the opinion that a federal law should be passed authorizing the federal government to more adequately control the manufacture and sale of dog foods.
>
> Eight stated that the Federal Food & Drug Administration should be solely responsible for the dog food problem.
>
> One veterinarian expressed the opinion that the efforts of the veterinary associations were simply a duplication of the work already carried on by the Food & Drug Administration.
>
> Thirteen believed that authority should be delegated to the federal government to carry out the work, but that veterinary supervision should be employed.

To help clarify the situation for the veterinarian, information has been obtained from the Bureau of Animal Industry and the Food and Drug Administration as follows:

The Bureau of Animal Industry is a unit of the United States Department of Agriculture. The Food and Drug Administration, however, is a part of the Federal Security Agency. These two departments are totally unrelated other than being sections of the federal government. The Bureau of Animal Industry maintains a meat-inspection service for establishments operating under federal supervision. The law appropriating funds for this service does not provide for the inspection of animal feeds. At present certain canners of dog foods are using plants and equipment producing human foods. The Bureau of Animal Industry regulations do not provide for inspection of dog food nor do they attempt to regulate or determine its nutritional quality. Government inspectors examine all ingredients brought into federal-inspected plants for use in the manufacture of dog food. For example, should a manufacturer preparing canned dog food desire to use ground beef lungs and barley as ingredients, both the lungs and the barley must pass the same inspection as if they were to be used in preparation of human food. Although the mixture of lungs and barley from a nutritive standpoint may be unsatisfactory, nevertheless, the ingredients were inspected and passed and the product was prepared in a plant operating under federal regulation.

In a letter received from the Bureau of Animal Industry, dated September 26, 1941, Dr. John R. Mohler made the following statement:

> The Bureau does not inspect the canned animal feed prepared at packing houses where Federal meat inspection is maintained. In an indirect way, the meat inspection regulations effect a benefit to canned dog feed, etc., prepared at a federally inspected meat establishment through exclusion from canning departments of objectionable animal tissues, vegetables, cereals, and the like. However, the same exclusion would be applicable to ingredients brought into the same canning department for the preparation of canned hominy, canned mush, canned mushrooms, and the like. Objectionable animal tissues are excluded from the canning department by reason of their nature and not because

*Prepared by M. L. Morris, executive secretary, Joint Committee on Foods.

the packer may wish to include them in the preparation of dog feed. Canned animal feed, as you know, falls within the scope of the Federal Food, Drug, and Cosmetic Act and is not in any wise within the authority of the Federal Meat Inspection Act.

For reference see BAI circular letter 1952.

This service is available only to manufacturers of canned dog food prepared in federal-inspected plants. There is in addition millions of pounds of dry dog food sold annually. These dry products are manufactured and marketed by millers, grain and feed dealers, cereal manufacturers, and others whose plants have no continuous supervisory government inspection. In addition there are a number of manufacturers preparing canned dog foods in plants having no federal inspection by the Bureau of Animal Industry since they are not producing foods for human consumption and consequently these products are not subjected to any type of continuous supervisory inspection except that which may be prescribed by the various states. State inspection commonly consists of a chemical analysis of the finished product.

Dog foods shipped interstate must have a label either printed on the container or a separate label pasted or attached to the container. The information appearing on such labels is regulated by the Food, Drug and Cosmetic Act, the enforcement of which is the function of the Food and Drug Administration of the Federal Security Agency. The following portions of a communication dated October 2 from Senior Veterinarian H. E. Moskey of the Food and Drug Administration may aid in furnishing the veterinarian with a clearer understanding of the function of this administration:

From your comments regarding the questionnaire which was circulated among veterinarians it occurs to us that there may be some misunderstanding concerning the extent of the Food, Drug, and Cosmetic Act as it applies to animal foods. Unlike the Meat Inspection Act, which is enforced by the Bureau of Animal Industry, the Food, Drug and Cosmetic Act does not contain any provision providing for the continuous supervision and inspection of food manufacturing plants by this administration, nor does it grant us the authority to "approve" any food or its label. We are, however, always willing, on request, to offer our informal comments to manufacturers or their agents as to the application of the Act to a particular product.

The finished package must be labeled with the common or usual name of the food, a complete statement of ingredients in descending order or predominance, together with an accurate statement of quantity of contents, and the name and place of business of the manufacturer, packer or distributor. If any artificial flavor, artificial color, or chemical preservative is used, the label must declare its presence.

By reference to the definition of food in section 201 (f) of the Act you will note that this term applies to articles used for food or drink for both man and animals. In the enforcement of the Act, however, we have been unable to give that degree of attention to animal foods that might be expected in view of the size of the animal food business. Our appropriations are not sufficient to cover all products on the market, and we therefore have concluded that it is in the public interest to give first attention to foods, drugs, and cosmetics for humans and to veterinary remedies. This program naturally leaves but little time for attention to such articles as dog food.

It is apparent from these statements that the Bureau of Animal Industry is not definitely charged with the responsibility for determining or supervising the nutritional quality of dog foods as they are offered for sale in the markets of this country. It is also apparent that the limited facilities at the disposal of the Food and Drug Administration permit very little regulatory attention to dog foods under the Food, Drug and Cosmetic Act.

There are, no doubt, many veterinarians who have noted from time to time in our professional journals and elsewhere stipulations published by the Federal Trade Commission regarding claims made in advertising by manufacturers of dog food. The Federal Trade Commission is an entirely separate department of government in no way related to the above bureaus. It deals with advertising claims and particularly those which the agency considers misrepresentative and which give the purchaser a false conception of the product offered for sale. A few quotations from recent stipulations

by the Federal Trade Commission will serve as illustrations:

Stipulation 02690.—The company agrees to cease and desist from representing that its dog food is better than uncooked dog foods; that it owns, operates or controls a laboratory; that its product prevents skin disorder, aids in assimilating mineral matter, stimulates the glands, tones the digestive tract, or aids the lustre or sleekness of the hair coat.

Stipulation 02907.—This manufacturer agrees to cease representing that his product will reduce feeding costs 50 per cent or effect any definitely stated percentage of savings when compared with other dog foods of similar type; that his product is known as the veterinarian's dog food or that the product can be depended upon to prevent or avoid eye infections; that use of one of his products will assure the raising of every puppy in the litter and that the vitamins contained in the food will not deteriorate. He further agrees to cease representing that the product contains meat; will prevent skin troubles or will make pups more true to type.

The Federal Trade Commission, however, has no jurisdiction over the advertising claims of manufacturers operating under the Packers and Stockyards Act.

From the above outline it is apparent that continuous attention to the wholesomeness and nutritional quality of both dry and canned dog foods becomes the obligation of some authority and it is here that the dog-food-testing program sponsored by the veterinary associations fills an important need.

The following example will serve to illustrate, also that the details of the work of the Joint Committee on Foods are not fully understood:

> The present set-up (this veterinarian refers to the dog food testing program) is a duplication of the services under the Pure Food and Drug Act.

The communications from the federal agencies, quoted above, prove that the dog food testing program is not duplicated by these agencies. It seems appropriate, therefore, to briefly review the methods of the Joint Committee on Foods of the veterinary associations as they are at present conducting the dog food testing work. The manufacturer must sign an agreement with the associations, which includes rules and regulations under which they must operate, if the tested and approved product is to bear the veterinary seal on the label. The product is subject to annual re-examination to insure maintenance of the requirements. Samples obtained in the open market are subjected to chemical analysis, and to feeding tests employing white rats and dogs. All data obtained from these sources are passed upon by an Advisory Scientific Council and the Joint Committee on Foods. In addition the label copy is subjected to review and before the emblem can appear on an approved product not only must the test data be entirely satisfactory but the label claims must also be approved by the Council and Committee. The advertising claims made for an approved product are likewise subject to censorship. Plants and ingredients are inspected periodically by a veterinarian. In carrying out these details it can be appreciated that harmonious relationships with the three departments of the federal government are essential.

After having made a careful study of the information contained in this article if you still have some question regarding the purposes or methods employed by the Joint Committee on Foods of the American Animal Hospital Association and the American Veterinary Medical Association, you may write directly to the office of the executive secretary at New Brunswick, New Jersey, or to the American Veterinary Medical Association, 600 South Michigan Ave., Chicago, Ill.

Since there is no restriction on the use of tin in the Argentine, announcement has been made that a great deal of canned dog food will henceforth come from that country. As previously announced, the use of tin cans for dog foods will not be permitted in the United States "for the duration."

A letter from Foreign Corresponding Secretary Dr. Hans G. Bendizen of Copenhagen, Denmark, dated November 1, 1941, accepting reappointment by President Jakeman arrived at the central office March 30, 1942.

EDITORIAL

What About "Wartime" Conventions?

PLANS FOR THE seventy-ninth annual meeting in Chicago, August 17-20, are rapidly taking shape. This seems a good time to say something about conventions in wartime since an occasional member has raised the question.

The AVMA was born during one war—the War Between the States—and since that time (1863) it has held its annual sessions, with benefit to the profession and the country, with only one interruption; this was in 1914 and the cancellation then was due not to World War I, but to the serious outbreak of foot-and-mouth disease which kept the veterinary personnel and agencies of the nation engaged on another battle front.

This year finds the world engaged in "total war", which involves adapting every instrument to military and civilian needs. Conventions of technical and professional groups such as ours have already proved their value and are therefore encouraged by governmental agencies. It is *not* unpatriotic to meet in wartime, because our Association has problems of vital import to the nation to discuss. If ours were merely another "convention" with the usual trappings, the story might be different.

Moreover, the AVMA cannot very well get along without its annual session. The Association is incorporated and there are legal complications in by-passing stated meetings required by the constitution and administrative by-laws. There is important association business which cannot be transacted without the necessary sessions of the House of Representatives and Executive Board.

Rest assured that every effort is being made to key the program of the seventy-ninth annual meeting to war interest and war problems. It will be a working meeting primarily—nevertheless, there will be opportunity for the fellowship that should be at the core of any convention undertaking, and with unusual entertainment possibilities for members and their wives in keeping with the times. Outstanding features are in the making in educational and technical exhibits, clinical depictions and other instructional material which is the measure of scientific veterinary achievement and progress.

Interest in the meeting plans is keener this year than usual. More papers have been volunteered by members, in response to the printed call, than last year. Technical exhibit space as great as last year was almost completely sold out within two weeks after the official announcements were mailed.

Our members and other veterinarians should not be too busy to come to Chicago in August; travel restrictions should not be a serious factor for a majority who attend our meetings; finally, the vacation aspects of the convention for many people should not be passed up; the Government encourages people to take them as a measure to sustain health, fitness, efficiency and morale.

All of this simply leads up to this point: Veterinarians as an organized group can less afford to stay away from their association forums in wartime than in peacetime. The attendance of yourself and your wife in Chicago in August should be planned now.

The North Dakota Agricultural Experiment Station has shown that it does not pay to caponize turkeys. The operation does not increase growth nor size sufficiently to justify the practice.

What the Average Family Eats: Oils and Fats

Few city families are in the habit of eating all of the so-called protective foods necessary for health and strength, according to a report of the Office of Defense Health and Welfare Services issued by Administrator Paul V. McNutt. At the request of Mr. McNutt, a survey of "community nutrition" is being conducted in South Bend, Ind., by Crossley, Inc.

Of the eight basic food groups among the "musts" in national nutrition are milk and milk products, meat, poultry, eggs and fish, raw salad greens, green or yellow vegetables, whole-grain products, and citrus fruits. The part played by the veterinary service is indicated in this list of "must" foods.

Another significant release pertinent to the same subject, as well as to the industries, is entitled "Fats and Oils" (USDA) showing that the more and closer the food-for-freedom effort is surveyed, the clearer it becomes that in farm crops and farm animals lies the hope of keeping our country from vanishing from the face of the earth. More cattle, hogs and sheep and a larger acreage of oilseed crops are needed to successfully carry out the war effort.

The American population consumes 11 billion pounds of animal and vegetable fats annually and it produces only 9 billion pounds, much of which is lard, tallow and butterfat. The vegetable group of home-grown fat producers is corn, peanuts, flaxseed, cottonseed and soybeans. The quota obtained from fish oils (shark, salmon, sardines) is too small to materially change the total.

Inasmuch as imported oils (fats) are no longer obtainable, American agriculture is asked to step up fat production to make up the deficit. Yet, in all of the planning by presumably capable functionaries, there is never a word about getting earnestly behind the fighters of plant and animal diseases. Truly, democracy has its weak spots.

A section of the Chicago Union Stock Yards—largest of all livestock markets. This is one of the many places to visit during the seventy-ninth annual convention of the AVMA, August 17-20, 1942.

Discussing Politics in Professional Journals

Says the *Veterinary Record* (London) editorially: "It is not our custom to comment on the general political situation, but world events hang like a cloud over all of our activities."

By what token is it not the custom and duty of a profession to "comment on the general political situation" of the country wherein it labors? If the professions—the recognized specialists of their realm—customarily dodge the political questions, to whom may statesmen look for guidance on the science and art they are expected to govern for the benefit of the people? Statesmen "push us around" and the cause, perhaps, is our own self-abnegation which leaves them uninformed. How can the chosen functionaries of a democracy classify, intelligently, the members of a profession who intentionally refrain from edifying them on the traditional grounds that science is something apart from the other human efforts—from the commonweal. Assuming that the learned professions are what they profess to be, what could be more patriotic than to employ press agents to keep the statesmen informed?

Here our headline needs explaining. *Politics* (*sg.* and *pl.*) is the science and art of government, and *politician* is one versed or experienced in that vocation. The colloquial use of *politics* and *politician* one may leave to the psychoanalysts of human frailty.

Unafraid of custom that should have been abolished long ago, the JOURNAL has pointed out that there has developed in modern nations large public administration societies (*e.g.* medical, dental, veterinary, etc.) designed to watch over public welfare in their field. In recent years, these professions have begun to understand science as but a means to their ends. In the scientific circle of the changing world, it is no longer a strain on dignity to rush to the "mike" and tell the world precisely about the objectives of a given science.

Now, in the midst of a raging war of attrition, scientific periodicals see the error of their ways as they try in vain, and too late, to raise their voice over the chaos and roar of far-flung battles. Science of the democracies is beginning to comprehend that it should always have lived, not aloof, but closer to the commonweal. The close, the constant, the studied relationship of science, industry and government in Germany in modern times is something for the democracies to ponder.

For having commented on particular or general political situations when occasion demanded, the JOURNAL makes no apology and it hopes, in the country's interest, that no change in this respect will ever arrive. Talking politics concerning the science and art of veterinary medicine is a duty owed to the American people in their *kampf* for self-preservation in peace or in war.

To be considered specially, is the doctrine that the journal of an association like the AVMA is not uniquely scientific. Science, as stated above, is but a means of reaching its ends. The main purpose is to build up the morale and power required to fulfil its mission to the best advantage of the nation. Avoiding political discussion by professional journals in a democracy is equivalent to deserting the cause and nullifying its worthiness. Science unapplied, or not applied, under the wise guidance of a society is apt to be wasted human effort. Better that we understand that the *laissez faire* attitude toward the political arena is unwise in association work.

The Work of the Veterinary Profession Wins More General Appreciation

The present upset of conventional human conduct has had a wholesome effect on the progress of veterinary medicine. The general population is no longer entirely unaware of the veterinarian's place in the world's work. The relation of veterinary science to human welfare has become better understood. On close investigation, economists have found the work of veterinarians underlying much of the world's progress. The guardians of animal health have thus won prestige not heretofore enjoyed. The United States is a great warehouse of human necessities and the cause of the abundance is now known to be

its healthy domestic animal population brought about by the operations of its veterinary profession. When Hitler started out to conquer, he first placed a veterinarian in command of animal production and he developed the veterinary educational system to such a degree, in order to carry out the project, that even American veterinarians touring Germany in 1938 were amazed at the extraordinary expansion. The objective, of course, was augmenting the food supply along with the other "implements of war" of which the whole world is now well aware—some countries to their sorrow. American veterinarians will recall a large delegation of German veterinarians who made a conducted tour of the United States in 1937 to study the American system of veterinary medicine, which has brought such abundance to the population of our country. Chicago veterinarians vividly recall entertaining the group at a dinner session given by their conductor—the American Express Company.

An event of the recent past indicating the improved appraisal of the veterinary service was President Roosevelt's nomination of Col. Kelser, director of the Veterinary Corps, for the rank of brigadier general and the confirmation of the nomination by the United States Senate. The Commander-in-Chief of the Army, in so doing, not only honored the man for work well done in the armed forces during the emergency but also recognized all of the fighters for farm-animal health, whose work through the years made possible the present strength of our country.

Science and invention has nullified the fine isolationist doctrine of George Washington as completely as the people wiped out prohibition. The oceans of George Washington's time were not so narrow, and the people of his time did not dream of the commerce his country would develop all over the world.

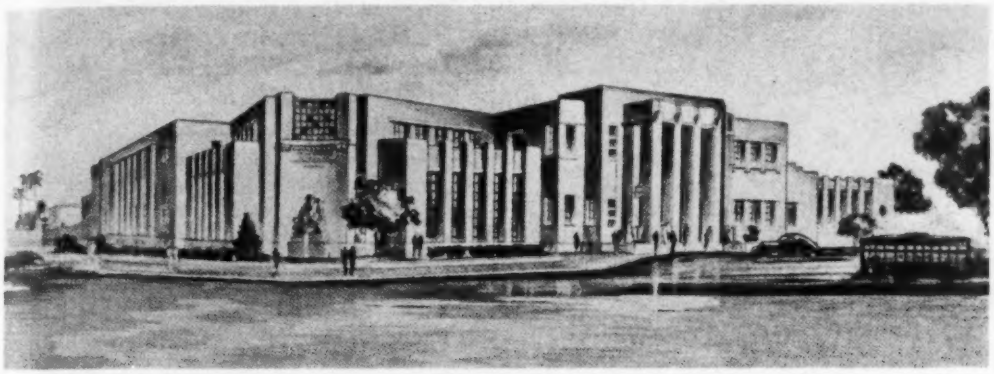
The tiniest minds of the U.S.A. in 1942 are the ones who agreed to sink the U. S. Navy in the 1920's.

Let's Take a Vacation

The Extension Animal Husbandman for March quotes Woodrow Wilson as having said "We do not need less criticism in time of war, but more. It is to be hoped that the criticism is constructive, but, better unfair attack than autocratic repression."

The apophthegm is timely and an appropriate theme for a text on the food-for-freedom program, inasmuch as we believe that in all of this volume of advice to farmers on just what they should do to increase the production of animals, the control of diseases—the greatest enemy of animal production—is studiously or unknowingly avoided. The issue (*loc. cit.*), in telling the farmers of seven different states how to proceed with the "food-for-freedom" program, is practically silent on that score. Nowhere are farmers advised to obey the doctrines of veterinary medicine—the field of science, which by its research and experience, has made livestock production in the United States a worth while enterprise. As a matter of fact, as Dean Dykstra told the veterinary students of Iowa State college (*vide*, p. 442) we have no sweeping, serious animal plagues and the reason for that advantage is found in the disease-control work of the veterinary service without which advice on feeding and breeding would not be of much use.

"Let's Take a Vacation" is just a bit of unsuppressed sarcasm to remind the food-for-freedomers that the country we are all fighting to preserve has animals to write about because it established a veterinary service that took disease by the horns and never let go, to take a vacation. So, poultrymen, sheepmen, swinemen, cattlemen, don't let your advisors make you believe that you can, for long, go on raising livestock on balanced rations, lush pastures and genetics. There is something else behind your prosperity—its name is disease control. So, if there is any benefit to be derived from all of this deluge of circulars and bulletins on how to step up production, farmers must be told first of all that they have to abolish, as nearly as possible, the thief called disease.



Profile of Escuela de Medicina Veterinaria, Universidad de la Habana, illustrating the progress of veterinary medicine in the Republic of Cuba.

Cuba Honors N. S. Mayo

For work done 35 years ago in establishing the School of Veterinary Medicine, University of Havana, Dr. N. S. Mayo, chairman of the Committee on Education of the AVMA for many years, has been honored by the Republic of Cuba. The new nutritional laboratory of that institution is to be identified by his name. In announcing the construction of a new building shown herewith, Dr. Julio San Martin writes: "We have not forgotten the American veterinarians who have rendered our country great and valuable service." It will be remembered that following Cuban independence brought about at the turn of the century, Doctor Mayo spent a number of years in Cuba aiding in the building of a veterinary service in the new Republic.

Increasing Food Supply

Elsewhere in this issue (page —) is a review of a booklet entitled "Survey of Municipal and State Meat Inspection," reminding us that in the almost frantic movements to increase food supply, not a word is ever printed about the part the veterinarians will have to play to make any increase possible. Farmers are urged to seed more acres and to raise more animals but how an abundance of live stock is maintained is not stated in the program. That is, the promotors of plenty say nothing about fortifying the farms against diseases which would make chumps out of them in a jiffy but for the unsung work of the veterinary service. Here, we come to 1942, fighting a harrowing war, and yet not even our most brilliant statesmen realize that fighting farm-animal diseases should be entry No. 1 on their nation-saving agendum. Thanks to the tireless work of physicians and veterinarians in times of peace and their vigilance in war, pestilence and hunger have not yet shown their sharpest teeth in this war. What the future will bring in that respect depends a great deal upon the wisdom of our statesmanship. Diseases of the animal is a homely subject, but you can't laugh it off Senator, it's a holy terror. It may be the limiting factor of plenty and poverty, defeat and victory. Waving flags, spread-eagle orations and bond-selling ads never scared a microbe, and the microbial universe is always ready to pull off a big show. So, in this gargantuan urge of Oliver Twist for more and more and more to eat, don't forget the teachings of Koch and Pasteur, nor in our country, the work of Salmon, Melvin and Mohler and their contemporary workers in the states and farms.

In the fight for food and freedom by stepping up poultry production, veterinarians of the Middlewest should not overlook avian tuberculosis which causes a considerable number of retentions of swine in the abattoirs where meat inspection is carried out.

The Ethics of Veterinarians*

There has been no improvement in our ethics because there is no such branch of study in the veterinary college course. Being untaught, the graduates underestimate its significance and thereby block progress in our public relations. Ethics involves (1) the conduct of professionals among themselves and (2) their conduct toward the public. The first, being a topic for a long thesis, is passed over to consider the second, which is the conduct that establishes the profession's rating in a community: privacy concerning the affairs of one's clients, office arrangement adequate to insure privacy, cleanliness, keeping out loafers, working with quiet pride, personal appearance, and avoiding the silly, ridiculous advertising that brings unfavorable reactions to the profession. Imagine a physician advertising,

> Dr. James Jones, M.D., C.M.
> Specialist in Diseases of Children.
> Expert on Whooping Cough and Worms.
> Babies Exposed to Violet Ray Lamp.
> Children's Diet Arranged.

and you have an equivalent to the following advertisement copied from a directory,

> Dr. John Doe, V.S., B.V.Sc.
> Specialist on Diseases of Large and Small Animals.
> Expert on Sterility. Dogs Plucked, Bathed, Clipped and Boarded.
> Tel. 6504. Night or Day Calls Accepted.

Pardoning the "handles" at both ends of the names, nothing could make a profession more ridiculous to the public than such types of advertising. It represents the childish mentality of the amateur and cheapens and discredits the profession.

If a client discredits a colleague, which many delight in doing, the profession is not helped by agreeing with him. Although some lawyers, physicians and veterinarians may have made a lot of money through unethical practices, their respective professions are poorer as a result. In effect, they amassed fortunes on confidence that ethical majorities built up.

The standing of a profession is a composite of that of its members. There is, therefore, a credit and debit side on the balance sheet. The machinery required to keep ethics in order must be set in motion in the college curriculum. The unethical veterinarian is a costly unit of his profession in terms of pride and progress.

*Johnson, E. F.: Ethics of veterinary practice. Canadian J. Comp. Med. & Vet. Sci., v (Sept. 1941), pp. 254-258.

Excerpts from Pre-War Editorials

There is presumption in claiming the title of patriot without helping the governments of town, state and nation through the might of organization.—*The Journal, Sept. 1941, p. 190.*

* * *

The heroes of preparation and of war itself are the farmers, the breeders of livestock, and veterinarians who guard food supply from source to destination.—*Ibid., p. 224.*

* * *

No one can envisage the world of the near future. Animal diseases have made whole populations flee to the sea to save their lives and the world today has no means, except its veterinary service, to prevent that kind of history from repeating itself.—*Ibid., p. 245.*

* * *

The veterinary profession is pledged to prevent the food supply of our country from sinking below the level of the people's needs, a level to which it would quickly fall were animal diseases allowed to spread unchecked or their control to fall into antiscientific hands.—*The Journal, Aug. 1941, p. 149.*

* * *

Don't think of your boy at the training camp as a tearoom cad. He is being trained to stick a bayonet through the invader of your fireside without compunction. Otherwise, we are headed for the dreamless sleep of eternity from the anesthetics pacifists held to our noses for too many years.—*The Journal, July 1941, p. xxiv.*

* * *

Those delegated to take the science of animal medicine to the farms and homes have the choice of being received as advo-

cates of high motives or as exploiters of a canny craft which any branch of medicine becomes in the absence of its societies.—*The Journal, July 1941, p. xxiv.*

* * *

The fact that the veterinary profession has not been able to remove all doubt from the contention that this civilization can maintain its present standards of living only through resourceful attention to the domestic animal population, is one of the reasons why veterinarians have such a hard row to hoe.—*The Journal, Feb. 1941, p. 162.*

Your Future and Mine

Medical science, national economics and welfare, sustenance and health, agriculture and industry, and private interests are intermingled in the operations of the veterinary service. It touches the pocket book, the stomach and the soul to a degree never before as generally realized as now. As of war-torn 1942, animal diseases, pirates on the sea of food production, suddenly became something to look into. Slumbering through the years, the *dramatis personae* woke up in a world of hungry millions looking to the cornucopia of the USA for the necessities of life. An animal industry of magnitude unparalleled in the history of man had been created, thanks to the control of farm-animal diseases—to the operations of the federal and states veterinary service under capable leadership.

Grandiose? Well, hardly that. It's all simple enough. Farm animals are the one and only precursors of food aplenty provided their diseases are subdued. It required two great wars both in one generation to unveil the monument erected unnoticed by the veterinary profession—the monument of plenty with "Eradicators of Livestock Diseases" chiseled into its base. The monument has practical, not sentimental values. It was the work of Salmon, Melvin, Mohler and their lieutenants in the states and in the various branches of the profession. Through their efforts, not then seriously hampered by subversive exploitations, a tremendous commissariat was developed.

But, What of the Future?

There is now something else to look into. Ours is a fertile field poorly fenced against predaceous practices. Our work since its importance was more generally perceived has become good picking and some of the pickers, not being well trained and perhaps a bit selfish, are crashing the gate, and growing fat in the absence of a united effort to police our grounds. Our numbers are few and our bump of self-preservation as embryonic as the fontanelle. That our small group of less than 14,000 is not more solidly united to "hold that line" is a paradox in the annals of professional work. Fifty per cent of the total carries on; the other half sells short. In other words, the work with which we are charged is not well guarded.

While the veterinary service is being assessed at higher values and the people will always want diseases of farm animals kept under control, there is no equal assurance that the pattern we have cut will be the pattern of the future if our profession stays loosely united. The greater the work of the profession becomes the greater will be the temptation to intrude in search of laurels (and money). To perpetuate the status we have won and the plan we have signalized and hope to maintain, a great deal more united effort than was ever shown before will have to be made. It requires no microscope to see the exuberant exploitations growing on the ground experience and knowledge taught us to cultivate.

The veterinary service of the United States is an open book. But, it is a book too little studied by the people. Its monument is of Ceres, Hygeia and *Cornu copiae* combined. Its intimate relation to popular welfare is based upon well-grounded opinion and visible fact. But, if anyone or any group has anything better to offer the people as a plan for providing them adequate food, it would be patriotic for them to put that on record too.

Boiled down to a common denominator all that this means is that trained doctors

will do a better job of animal-disease control than quacks, provided the doctors are not out-smarted. An organization of 12,000 might help to postpone the evil hour.

Procurement and Assignment Service Vs. Personal Liberty

According to reports one reads in medical publications some physicians are not in accord with the function the P & A Service aims to perform for the nation. "Many physicians," one medical journal declares, "would rather apply directly to the Army or Navy for commissions than to volunteer to the Procurement and Assignment Service which might or might not assign them to the military service and which after all is a civilian agency."

The trouble with this sort of reasoning is that it connotes the fighting of this war according to as many notions as there are people—darn the organization, discipline and order that will best serve both the military and civilian needs, which perhaps, wiser minds have pronounced as of equal importance in this all-out defense of the country. Unquestionably, in view of what appears to be in sight, everyone will be drafted to the work for whatever he/she is best fitted to do, and will have to keep their personal desires in the background, as all good soldiers have to do.

The Community Sales Problem of France

To assert that the Republic of France fell because of the *ventes de bestiaux en foires* (= community sales) would be fantastic were it not a true reflection of the actual cause. And in view of the strange turn the marketing of livestock has taken in this country it is not as far flung as our uninformed population might suppose. The community sale is a stab at the country's heart. It represents the kind of damage the veterinary service has had to repair since time out of mind—setting aside the doctrines of sound medicine for easy money for speculation, come what may.

Comes information from France, once the most self-contained country in the world, that immediately following World War I and up to the present time, internal politics broke down so thoroughly that speculators in farm animals were allowed to have their own sweet way in selling farm animals at *les foires* despite the protests of knowing minds. Reading between the lines of a scholarly report just received on the subject of public sales, it is clear that France, suffering from political decay, saw farm-animal diseases gnaw at its main source of national security—its never failing supply of live stock. We are not at liberty to name the author who writes this weird story of what happened to France when the bars of livestock sanitation broke down through internal political strife. Making the veterinary service keep hands off of animal-disease control, this savant says, is not only evidence of a nation's decay but the quickest way to destroy it.

What's "Cryptanalysis?"

In the article* on the Procurement and Assignment Service there appears the word "cryptanalysis" in the following sentence: "Any additional information regarding special aptitudes such as aviation, radio or cryptanalysis which might be of value, knowledge of foreign languages and foreign travel should be included." So, a perturbed reader not finding the word in a pile of dictionaries nor in the vocabulary of the school teachers, lawyers and physicians of his town decided from his own analysis that the word meant the deciphering of codes or secret writings, and he was right for that is precisely what the word means in the language of written communication. Broken down, etymologically, the word defines itself in the place used.

It is futile to look into dictionaries for the definition of new words for precious as they are, the march of man is too speedy for them. Man must coin new means of expression as he marches on and explores new fields. Dictionaries follow but never lead in word making.

*The Journal, March, 1942, page 285.

SURGERY & OBSTETRICS

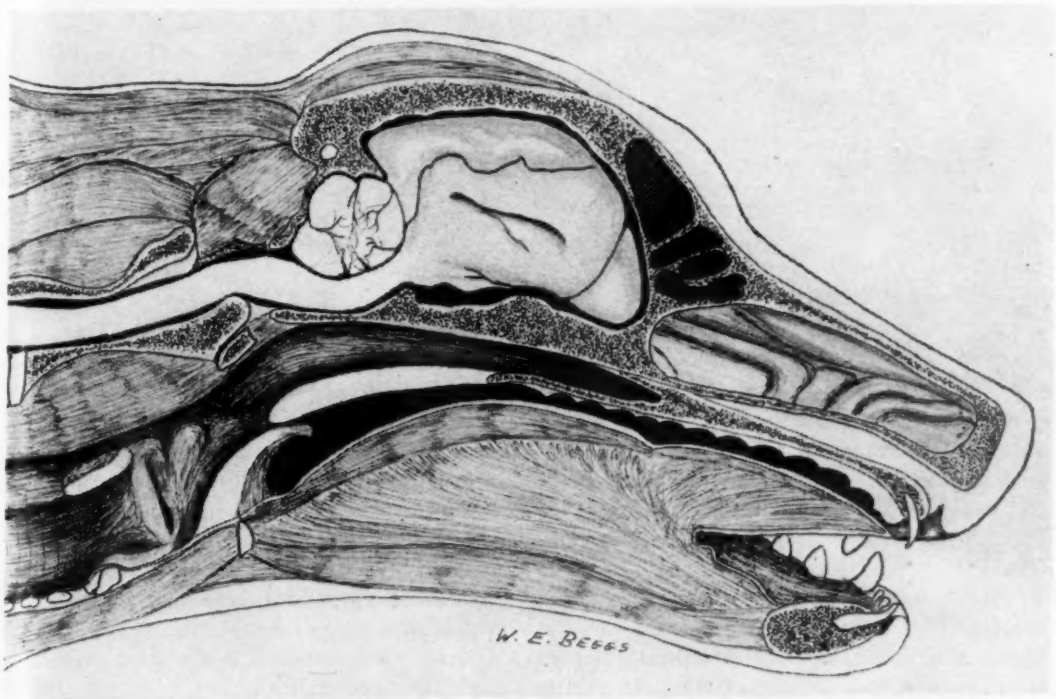
AND PROBLEMS OF BREEDING

Resection of the Soft Palate in the Dog

JAMES FARQUHARSON, D.V.M., and K. W. SMITH, D.V.M.
Fort Collins, Colorado

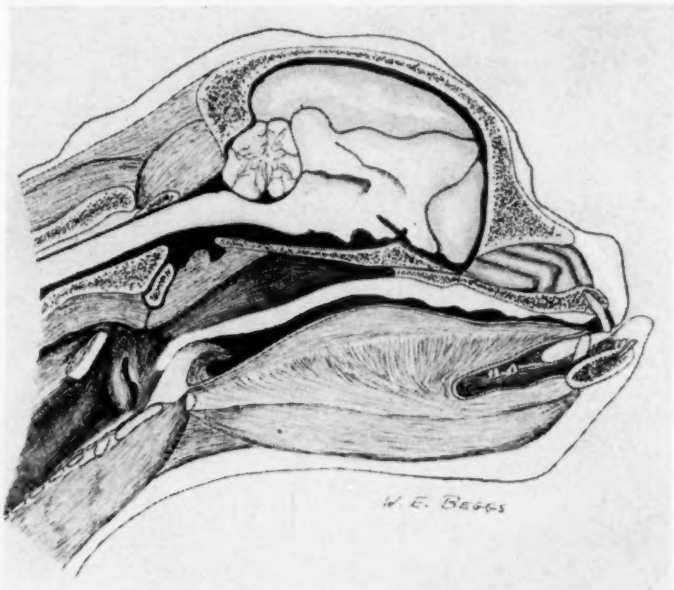
TACHYPNEA and inspiratory dyspnea are conditions most frequently observed in the brachycephalic type of dog, such as the English Bulldog, Boston Terrier and Pug. Because of fad, breeders have developed certain anomalies in this type of dog that should anatomically designate them as paramonstrosities. These defects are most pronounced in the head, particularly in the nasal, oral and pharyngeal cavities. It is apropos to call attention to the wide, abbreviated upper jaw which has brought about a marked shortening of the hard palate. The result is a reduction in the number of cheek teeth. In spite of a compensatory adjustment, the teeth are frequently wedged, so that improper alignment is the result. As the length of the floor of the nasal chamber is dependent on the length of the hard palate, the short, under-sized nasal chamber interferes with normal respiration.

The soft palate of the dog may vary considerably in length without interfering with normal respiration. However, there are limits, so that an excessively long soft palate



Median section of the head—mesocephalic type—showing relative length of hard and soft palates and relation to epiglottis.

will produce functional disturbances or even symptoms of distress. Studies of the soft palate, in its relation to the larynx, impress one with the fact that the soft palate in the brachycephalic types is proportionately longer than in the mesaticephalic and dolichocephalic groups. The relative length of the hard palate to that of the soft palate in the mesaticephalic types is 9 : 5, or approximately 2 : 1, whereas in the brachycephalic types the hard and soft pallates are about equal in length. Thus a short head in conjunction with a relatively long soft palate not only brings about velopharyngeal closure, but an abnormal encroachment of the central part of the free border of the soft palate into the laryngeal aperture.



Median section of the head—brachycephalic type—showing relative length of hard and soft palates and relation to epiglottis.

A uvula is absent in the dog although a uvular muscle is described by Bradley. This author substitutes the M. uvulae for the palatinus muscle recognized in the descriptive myology of all other domestic animals, which is not only unfortunate but is erroneous. The palatinus muscle (M. uvulae, Bradley) in the dog consists of two small muscles that lie side by side in the median plane and blend as they terminate before reaching the free border of the soft palate. There is no median prolongation of the soft palate in the dog. The latest textbooks on comparative anatomy substantiate this statement.

Normally, the free border of the soft palate is concave and thin. At rest, this border is usually in contact with the pharyngeal surface of the epiglottis, producing velopharyngeal closure.

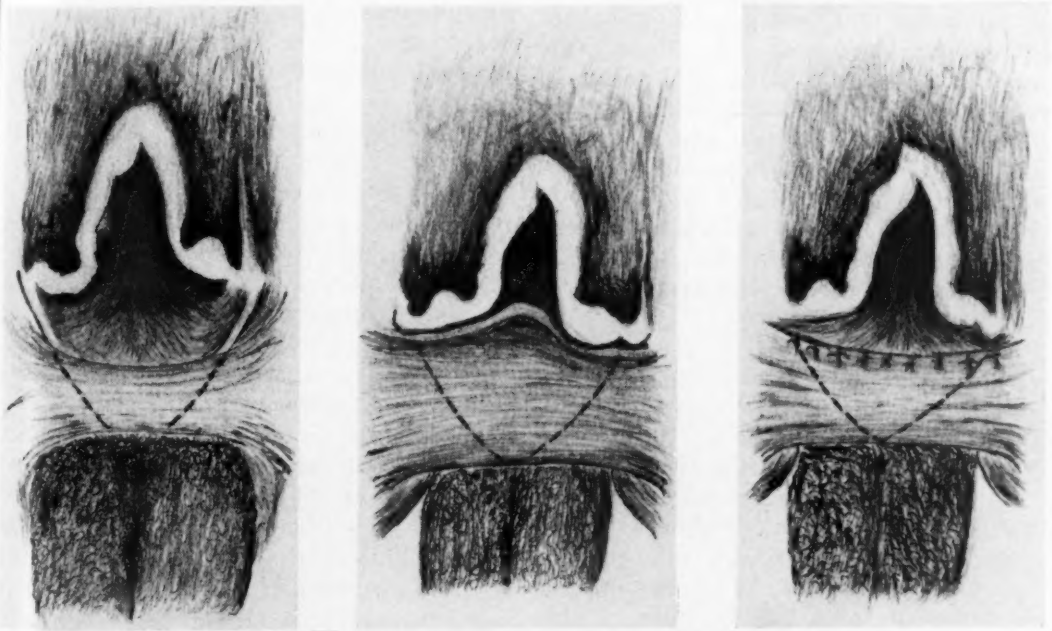
Other anomalies observed in the brachycephalic types are: The soft palate is thick, particularly its free border; because of increased function occasioned by mouth breathing, a compensatory physiologic hypertrophy results. This is particularly true of the English Bulldog. Many of these animals become mouth breathers on the slightest exertion and snoring is common when at rest. Examination of clinical cases has revealed that many respiratory dysfunctions are caused by forcible inhalation of the central portion of the velum into the laryngeal cavity. This reduces the volume of air on inspiration. Because of forced inspiration the free border eventually undergoes hypertrophy and causes the development of a central prolongation, or "false uvula." Following this change, the "false uvula" will lodge on the base of the epiglottis and when relaxed, as in sleep, will produce stertorous breathing. On exercise it will be inhaled into the laryngeal cavity causing pronounced inspiratory dyspnea

until dislodged by the animal raising the entire velum to permit mouth breathing. In our experience, this anomaly has escaped notice until the last three years.

The symptoms manifested by this aberration are local and general. The breed of the dog should be considered in making a diagnosis. The usual history is that of a stertorous or clicking, sonorous breathing when at rest and a mild, chronic cough, which is most pronounced following exertion or excitement. The inspiratory phase is usually prolonged and may be laborious. Many animals thus affected become offensive because of habitual flatulence. Undoubtedly, this is due to ingestion of air during forced inspiration. In pronounced cases, there is unthriftiness manifested principally by the appearance of malnutrition and an unhealthy dry coat.

Examination discloses the throat to be covered with a heavy, frothy mucus. The tonsils are enlarged, prominent, and not diseased. The soft palate is thickened but shows no inflammation. However the surface blood vessels are prominent. The visible mucous membrane of the larynx shows a compensatory hypertrophy. The usual diagnosis has been chronic pharyngolaryngitis, and treatment has been instituted accordingly. In other instances, tonsillectomy has been performed as a means of relief. Careful study in many of these cases will disclose the velum overlapping the entire dorsal surface of the epiglottis with the central portion, in the form of a central prolongation (false uvula), occupying the laryngeal aperture during inspiration. It is also an established fact that the English Bulldog is a poor surgical risk from the standpoint of anesthesia. This is the result of improper oxygenation caused by inspiratory dyspnea. Prolonged tachypnea is outstanding, often following slight exertion. Therefore, when symptoms of irritation or even those of distress occur during inspiration, the velum and its relation to the laryngeal orifice should be carefully examined.

Satisfactory treatment for this condition requires an understanding of its cause. Surgical correction is indicated for the purpose of restoration of functioning parts. This is accomplished by establishing as nearly as possible the normal anatomic relationship of the soft palate to the larynx,



Left: Dorsal view of relation of soft palate to epiglottis and laryngeal aperture in mesocephalic dog. Center: Dorsal view of relation of soft palate to epiglottis and laryngeal aperture in brachycephalic dog. Right: Following operation in brachycephalic dog.

in order to facilitate proper breathing. The name proposed for this operation is "resection of the soft palate," or "palatoplasty." The term "uvulectomy" is not appropriate in the case of the dog, since the uvula is naturally absent in this species.

Preoperative care should consist of starving the dog. A balanced anesthetic consisting of morphine or H.M.C. should be administered 45 minutes before operating. Surgical anesthesia is completed with nembutal.

The animal is secured on the operating table preferably in a ventral position. The soft palate is exposed by the use of a mouth speculum. An assistant raises and steadies the head.

The throat is swabbed with any reliable antiseptic after removal of the residual mucus. The posterior border of the soft palate is secured with an Allis forceps and brought forward. With a sharp knife, a curved incision is made starting at the lateral edge of the free border and continuing to a similar position on the opposite side. Thus, a crescent shaped portion of the velum palati is removed, being deepest at the median line. The procedure that has been followed by us is to incise one-half of the palate to the median line. The cut surfaces are then sutured with interrupted sutures (No. 1-10 chromic catgut). When this is completed, the other half is removed and sutured. This procedure reduces hemorrhage to a minimum and the chance of aspirating blood into the trachea. When the diagnosis has been correct, almost immediate relief in the respiration will be noted.

Postoperative treatment is unnecessary as oral mucous membranes heal rapidly. The animal will show evidence of a sore throat for about four or five days. Soft food should be given during this time.

Experimental animals were used in an attempt to simplify this operation by substituting a forceps and actual cautery for the knife. Comparison of the two methods was decidedly in favor of the knife. Subsequent edema was far more pronounced in each instance in which actual cautery was used. It did not control hemorrhage sufficiently to justify omitting sutures, and soreness was in evidence over a longer period of time. One animal in which suturing was omitted developed severe secondary hemorrhage. Therefore, it was considered that this method was generally an unnecessary mutilation.

The outcome of this operation has been satisfactory. Local symptoms of distress disappear. Chronic cough and the symptoms of chronic pharyngitis are alleviated. Snoring is eliminated and the general appearance and vitality soon return to those of a normal, healthy animal. After three years' experience we have had no fatalities. This operation should be performed only when the clinical picture is typical and thorough examination confirms the presence of this aberration.

Extirpation of the Tumefied Harderian Gland: Preparation and After Care

As the eye is a delicate organ it should be handled with care at all times. The luxated Harderian gland is unsightly, partially obstructs vision and causes objectionable lacrimation. There is also danger of infection entering the eye and its surroundings as the protruding gland is exposed to injury from scratching. Only surgical removal is successful. The eye is prepared by instilling butyn (1 to 2%) at four intervals of 3 to 4 minutes. After the last instillation the eye is ready in 4 to 5 minutes. This plan gives sufficient anesthesia to render the operation practically painless. To prevent bleeding a minim of epinephrine (1 : 1,000) is dropped into the eye a minute or two before operating. The solution shrinks the swollen mucous membrane and gland itself. This plan is gratifying in that there is no pain and but little hemorrhage. Cold compresses check any small amount of bleeding that may be present and soothe the eye. Strong bright light following removal of the compress is avoided by keeping the dog in a darkened room for eight hours or longer. The schedule is pleasing to the owners of pets.—*W. L. Skinner, V.C., U.S.A., Fort McClellan, Ala.*

CLINICAL DATA

The biggest problem in making poultry pay today is probably the one of disease. —*Fred Ferguson in Successful Farming.*

Except in German occupied countries, major epidemics of typhus are not likely to occur in Europe.—*Jane Stafford in Science.*

Failure to gain weight, loss of flesh, diarrhea and anemic mucous membranes are the cardinal symptoms of blood-sucking worm infection.

Guarding against sweeping contagions in farm animals is a duty more sacred than guarding the seashore against invasion by the enemy nations.

Equine influenza is a merciless malady. As the nation prepares for large scale military operations, it is quite certain to come into the foreground.

Bulletin 453, Wisconsin Agricultural Experiment Station, announces that feeding steamed bone meal to chicks increases their susceptibility to coccidiosis.

The liver of the dog has more to do than that of the plant eaters. It must manufacture a lot of carbohydrate out of nitrogenous material (protein).

Trichinae which causes the serious disease, trichinosis, will not survive in pork treated by a special freezing method developed by the U. S. Department of Agriculture. The thickness of the cuts of pork or the inside dimension of the container determines the length of time the meat must be subjected to a given temperature to destroy any trichinae that may be present.

There is more vitamin D in eggs than in any other foodstuffs.—*Science New Letter.*

There are approximately 30 virus diseases affecting man and 37 affecting animals.—*A. Eichhorn, J. A. V. M. A., Feb., 1942.*

Edema of the limbs, local or general, in feeder cattle is a sign of vitaminosis A.

In a categorical report on equine encephalomyelitis made for the month of September, 1941 the advisory committee of the Eastern Iowa association recorded 162 cases with 20 deaths.

The dust storms of the Great Plains, with subsequent increases of the silica content of dust, have brought about an increase in fibrosis of the lungs with physical findings bordering on silicosis.—*From American Journal of Public Health, May, 1941, p. 438.*

Disease has been a constant threat to the livestock industry. Were it not for the findings of research in the cure and control of disease, extensive production would be impossible today.—*Philip A. Lautenbach, University of Wisconsin in The Cattleman.*

The USDA predicts that thousands of acres of land may be planted in tobacco in the near future for the purpose of producing the nicotinic acid fraction of vitamin B. It is estimated that if all of the nicotinic acid used in the United States were made from the tobacco plant (*Nicotina rustica*), 17 to 20 million pounds of tobacco would be required. The cost, it is said, will be about the same as for nicotinic acid made from coal tar.—*From National Can.*

Effect of Phenothiazine on Weight in Lambs and Goats

Phenothiazine in doses of 30 Gm. given approximately 1 month apart, in one tablet of 15 Gm., and three tablets of 5 Gm., to three goats and six sheep known to be worm-free did not lose weight when checked against an equal number of controls kept under analogous conditions for 15 weeks from the time of receiving the first dose. As weight is the economic criterion of anthelmintic value rather than egg-counts, the result is obvious. [*Leiper, J. W. G., M.R.C.V.S., and Peters, B.G., M.Sc., Ph.D: The Effect of Phenothiazine on the Weights of Worm-free Sheep and Goats. Journal of Helminthology, xix (Dec. 1941). pp. 71-74.*]

Grooming Cows

The mill run of American farmers do not groom their dairy cows and what is more amazing, since lice can be controlled by grooming, is that veterinarians believe that louse-killing remedies are necessary in dairy practice. Cows as a rule are dirty enough without adding more dirt in the form of insecticide powders. Moreover, grooming helps cows in other ways. It saves feed. I realize the difficulty of grooming feeder cattle.

I believe that the government's request for a 10 per cent increase in dairy products could be brought about by good grooming of the milk cows. Because few dairymen realize this, the veterinarians should point out the errors of their ways. Another loss of milk arises from the too common habit of sending the dog to bring the cows in from pasture.—*Chas. Haasjes, Shelby, Mich.*

The hump of the camel is a source of energy stored away in the form of fat. As fat contains considerable water, the hump is also a storage place for water.

Between 55 and 65 per cent of the body weight of higher life is water; approximately 17 per cent protein, and from 13 to 24 per cent fat and 4 to 4.6 minerals.

Chili Rich in Vitamin A

Chili concarne with its meat and bean protein is a precious morsel. Chili pepper is one of the richest sources of vitamin A, hence its popularity in hot, arid regions where the carotene of leafy vegetation is sparse. A recent analysis made at the home economics research laboratory of New Mexico showed that chili pepper was richer in carotene than the mild paprika peppers of Europe.

The Clinic Reveals What Science Can't See

Says Freman Lloyd in an article entitled "Deerhounds of Scotland" in *American Kennel Gazette* for April:

> I was once told by the famous Teddy Morgan, an old time Bulldog fancier of the Bethnal Green quarter of London Town, who was rich in dog lore but as poor in pocket as the belly of a church mouse, that horse fat was considered the best unguent to rub into the skin of the toy Black and Tan that had lost its hair because of mange or constitutional disorder. It will grow hair on a brick.

To that quotation one might add that there is perhaps more to ointments than their physical properties. In France, nothing save peanut fat (oleum arachis) is regarded right and proper as a vehicle for mange cures, and several veterinary supply makers in this country are now pointing out the superior merit of their peanut ointments for skin troubles in dogs. Roentgenologists of this day use aloes, healer of the ancient physician, on x-ray burns. So, there may be more truth than fiction in the Cockney's salve that will grow hair on bricks. There seems to be hidden ingredients in organic drugs that chemists do not detect, and pharmacologists have yet to understand.

Rot, rust and rats are named by USDA as the "Three R's" of destruction with which farmers have to contend. It is always profitable to control these, but in war when every farm is a part of the production program, there is more reason to do so.

The Place of Mathematics in Therapeutics

J. H. WHITLOCK, M.Sc., D.V.M.*
Manhattan, Kansas

IN A RECENT editorial in the Journal of the American Veterinary Medical Association the substitution of mathematics for biology is rightly deplored, but it seems logical to suggest that what is needed is not less mathematics, but more of the correct kind. In a report of a therapeutic investigation of any sort, two things are of prime importance to the practitioner.

1. What proportion of the cases were successfully treated.
2. What proportion of failures were observed.

Absolutely fundamental to any elucidation of these is a clear-cut definition by the observer as to what constitutes success or failure. Too often in anthelmintic literature is the mere removal of worms from a host cited as the basis for the treatment of a parasitic disease. How can any observer prognosticate the efficacy of a drug in a certain disease unless he treats animals which are suffering from it. The mere presence of worms in an animal does not mean that the host is suffering from a disease caused by that parasite. As a matter of fact, recent investigations in the immunology of parasitic infections indicate that a few parasites may actually be of service to an animal in that they keep its immunity mechanism concerned in the development of the disease syndrome functioning.

The instant, however, that an investigator decides what constitutes success or failure, he has created a yardstick to measure his drug and he has to report these measurements as figures — mathematics again. Now the most fundamental fact about measurements of any kind on living things is their variability. Each cell, each tissue, each organ and each animal is unique, and this must be accounted for. This is an old story to the practicing veterinarian. If each animal did not differ in his response to a therapeutic measure, anyone with the ability to read could successfully practice any form of medicine. It is the variability of all living things that makes the general practitioner the backbone of medicine. By compensating for this variability the practitioner gives his most needed service to a community. Laboratory workers are prone to forget this fact of variability. They tend to strike an average and spend all their time discussing it, forgetting that an average is a statistic which only becomes useful when it is accompanied by another statistic which measures the variability of the population from which the average was derived.

In summation of all this it might be said that no report of a therapeutic investigation expressed in measurements is worth the paper it is written on unless it takes adequate account of biological variation. Sometimes, of course, the variation is negligible; sometimes, although rarely, it has no influence on the problem being studied, but generally speaking it must be carefully observed in all experiments designed to compare two or more therapeutic methods.

Biological variation can only be compensated for in two ways.

1. by a detailed account of all the original measurements, or
2. by the use of *appropriate* statistical methods.

A combination of the two is, of course, best, but space limitations in our modern periodicals sometimes prevent this.

Statistical methods are like any efficient tool, a little dangerous in inexpert hands. Generally speaking they should only be used as a shorthand to report a large mass of data or to show if an apparent difference between two groups of experimental animals could be due to the operation of chance. The writer could list example after

*Assistant professor of pathology, Kansas State College.

example from recent literature wherein the experimenters have arrived at conclusions which were entirely unjustified from their data. Therefore, what is needed is not less mathematics but more of the right type. It is asking too much of the busy practitioner to expect him to analyze critically all the papers that he sees. But it is not asking too much for him to expect that any paper in a reputable veterinary journal be thoroughly analyzed to determine if the author's facts justify his conclusions. Surely there are sufficient veterinary research workers in the country willing to sacrifice part of their time to aid in enforcing a more stringent editorial policy on the part of our veterinary journals.

[The author confirms (not refutes) the JOURNAL'S contention. Mathematics is exact, biology variable. The adding machine can't replace the doctor.—Ed.]

Avian Tuberculosis Can Be Controlled

In the section "Clinical Data" of the April, 1942, issue there appears an article entitled "Avian Tuberculosis" which leaves some impressions that I feel should be challenged.

There is little doubt that in some of the midwestern states the problem of avian tuberculosis assumes grave proportions, and something should be done toward solving it. Your article suggests three methods for the control of avian tuberculosis but leaves the reader with the impression that they are impractical and that little can be done about the problem.

The first method suggested for the eradication of avian tuberculosis is economically unsound, as admitted, and when put into practice usually fails because the disinfection is carried out by the farmer without expert supervision and is seldom if ever properly done.

The second, or tuberculin testing method, is the scientific and most logical means of eradicating this disease, but in this article the cost of follow-up measures has been magnified and over-estimated.

The third method suggested has its merits and is effective when coupled with cleanliness and disinfection; but it does not always fit into the plans of flock management, especially with breeders who must retain the desirable older birds for breeding and also with commercial poultrymen who find it profitable to hold a certain percentage of their best layers for a second year of production.

If the veterinary profession wants animal husbandmen to look to it for aid in all of their disease problems, we can not pass off the question of the control of avian tuberculosis as being unanswerable. Avian tuberculosis can be eradicated, probably at much less cost, and with a greater return on the investment, than in the case of the eradication of bovine tuberculosis.

Tuberculosis is prevalent in poorly managed poultry flocks that are allowed to overrun the entire farm, thus becoming a menace to their own health and other domestic livestock. Tuberculosis is not a problem in the well-managed flock, properly fed and housed in separate quarters constructed for that purpose, and so that they can be easily and thoroughly cleaned and disinfected. Flocks so managed always pay substantial dividends on the cost of this better care. Therefore, there is no reasonable grounds for assuming that costs of the clean-up program following the tuberculin test are prohibitive.

Any program of eradication should be carried out by qualified local veterinarians working in coöperation with the various extension service departments of the state colleges. The veterinarian should do the testing and supervise the cleaning and disinfection of buildings and runs, and the extension service should furnish information on management, remodeling, and construction of equipment that the veterinarian is not qualified to give. Each flock will have peculiar problems to be carefully worked out, but in general the disease can be eradicated by a program of culling and tuberculin testing, coupled with sound practices of poultry management.

Our present cattle practice is a contemporary development with the bovine tuberculosis eradication program. Perhaps a successful avian tuberculosis program would

lead to an increased poultry practice for the veterinarian.

S/W. W. THOMPSON,
Kansas State College.

Avitaminoses in Farm Livestock*

In the feeding of livestock, vitamins A and D are probably the most likely to be present in insufficient amounts. Horses, sheep, and cattle are not likely to suffer from a deficiency of these vitamins, particularly if they receive the normal amounts of pasture, well-cured hay and sunlight. Pasture, yellow corn, and machine-cured hays are good sources of carotene (provitamin A). Sunlight and sun-cured hays are good antirachitics. If swine and poultry have access to yellow corn and pasture or machine-cured alfalfa hay, they probably will not suffer from a vitamin-A deficiency.

It probably is good practice to add fish-liver oil to the rations of rapidly growing chicks and high producing hens. This will supply both vitamins A and D. Either a fish-liver oil or irradiated yeast can be used to furnish vitamin D to swine, but for poultry, the former is better. An oil such as cod liver oil may be used for calves, but probably should not be fed to adult herbivorous animals, especially milking cows.

When green pasture is not available, a vitamin-A supplement should probably be made available to poultry in the form of a fish-liver oil, and for swine, machine-cured alfalfa-leaf meal is satisfactory.

There seems to be no need of supplementing the rations of cattle, sheep, and horses with any of the water-soluble vitamins. Any additional quantities of the vitamins needed are apparently synthesized by the microörganisms in the paunch of cattle and sheep and in the cecum and colon of the horse.

Since swine and poultry ordinarily consume a high percentage of whole cereal grains, either as such or ground and incorporated in the ration, it is not likely that their rations would be deficient in any of the water-soluble vitamins except possibly riboflavin and nicotinic acid, both of which are not present in the cereal grains to any great extent. The use of liver meal, milk products, or yeast is probably desirable when these species do not have access to green pasture.

*Excerpt from a paper read before the Annual Veterinary Conference of the University of Illinois by Dr. T. S. Hamilton, professor of animal nutrition, University of Illinois. Published in Animal Pathology Exchange, April 1, 1942.

Anatomy and Physiology of the Teat Canal

That negative pressure draws bacteria into the teat canal and acts as a factor in the causation of mastitis was not confirmed by experimental tests carried out by the authors, *i.e.*, no evidence could be obtained in support of the theory that negative pressure at the level of the external orifice develops as the positive pressure of milking is released. Erosion of the sphincter at the teat orifice appears to be the main opportunity for infection to enter the quarter, since neither the tonus of the smooth muscle of the teat nor the turgidity due to vascular engorgement could be associated with "letting down" of the milk. X-ray pictures taken after injecting barium into the teat, sphygmomanometer readings of the teat blood pressure and compression of the external iliac artery by means of a rumen fenestrum, while milking, were employed in making the observations.

However, when a thick barium paste was rubbed over the teat orifice while pressure (without causing escape of the milk) was exerted, a certain amount of the paste was drawn into the tip of the teat, showing that a slight contamination at the lower end of the canal does occur. But, the authors doubt that bacteria thus drawn into the orifice can migrate from that level to the teat cistern.

The eroded teat orifice appears to be the main culprit in mastitis. Machine-milked cows suffer injury to the sphincter more often than hand-milked ones. The constant suction of the milking machine on the end of the teat is in part responsible for teat-orifice erosions. [*Espe, Dwight and Cannon, C. W.: Anatomy and Physiology of the Teat Sphincter, Journal of Dairy Science, xxv (Feb. 1942), pp. 155-160.*]

Nonvirulent Rabies Vaccine

A rabies vaccine rendered nonvirulent by exposure to ultraviolet light in lieu of chemicals (ether, chloroform, phenol), and tested sufficiently to warrant trial in the field and laboratory has been developed by Webster and Cassel of the Rockefeller Institute for Medical Research. It is made by injecting young dogs intracerebrally with mouse-brain rabies virus — Pasteur strain. When the inoculated dogs are prostrate their brains are removed and titrated to make a 5 per cent emulsion in distilled water. After centrifugalizing 500 rpm for 5 minutes, the supernatant is freed of coarse particles and treated with ultraviolet light for 35 minutes, and tested for sterility.

Three intraperitoneal doses of 0.03 cc. each were found to protect mice against 10,000 lethal intracerebral doses as compared with 1,000 lethal doses for chloroformized vaccine. A widely advertised phenol-killed vaccine gave no protection. A single dose of 0.1 cc. of the irradiated vaccine immunized mice consistently against street virus injected intramuscularly. Another test consisted of injecting mice with irradiated vaccine three hours after receiving 0.01 cc. of street virus intramuscularly. Nonvaccinated mice developed rabies in 14 days and numerous ones survived. Nowhere did phenolized vaccine show any clear-cut protection, but chloroformized vaccine showed some protection and irradiated vaccine prevented the disease in most instances.

In dogs, the results were as follows: Of 162 unvaccinated dogs injected with rabies virus, about 84 per cent died; of 62 dogs given phenolized vaccine three weeks before receiving a test injection of virus, 72 per cent died; of 52 dogs given chloroformized vaccine, 50 per cent died; of 35 dogs given 30 to 50 cc. of irradiated vaccine, all but one were protected; and of 24 dogs given 5 to 10 cc. of irradiated vaccine concentrated 6 times, all were protected.

Irradiated rabies vaccine can be prepared in a week and released for use in another week. It is superior to other rabies vaccines for vaccinating dogs. [*L. T. Webster, M.D., F.A.P.H.A., and Cassel, J. M.D.: An Improved Non-Virulent Rabies Vaccine, American Journal of Public Health, xxxii (March, 1942), pp. 268-270.*]

Seven-Year-Old Gelding Swallows a Wire

Interested in the article entitled "Mare Swallows a Five-Inch Wire" published in the March issue (p. 254), D. C. Innes, Slayton, Minn., writes:

Last summer I treated a 7-year-old gelding that was purchased ten days previously. The horse was reported to be all right for the first three days and was in good condition, but when put to work hauling bundles, he breathed extremely hard and was exhausted after the day's work. He was not worked again. While standing in the barn he ate well and his respirations were normal but he started to lose flesh.

When examined, his temperature was 104 F., mucous membranes congested, pulse slightly increased, appetite, respirations and bowel movements normal. No diagnosis was made. Five days later he had become quite emaciated and several days thereafter he died.

The necropsy revealed enlargement and numerous abscesses of the spleen and massive adhesions of the stomach, spleen, intestine, liver and diaphragm. These accounted for the respiratory symptoms. In dissecting the mass, a soft, black enameled wire, 4 inches long was pulled out of the spleen.

Ground Glass in Bone Meal Kills Minks

In a pen of 83, a mink rancher was losing minks. The only symptoms were tarry droppings. Otherwise the postmortem examination was negative nor did the owner's descriptions shed any light on the nature of the trouble, except that he noted the tarry stools. Examination of specimens at the state experiment station at Pullman brought a report of negative findings.

A test of the droppings for blood revealed that they consisted almost entirely

of blood elements. After feeding nothing but eggs and milk for three weeks there were no tarry droppings until bone meal was added to the ration. One day of this feed was sufficient to cause the tarry droppings to recur and the death of two minks. When the owner brought in these carcasses for examination he brought along a few pieces of glass which he had found in the bone meal. Asked if this might be the cause I replied that if animals eat enough ground glass it would cause death. Based upon this clew, the entire alimentary canals of the two minks were scraped and the contents washed. Everything soft was washed off and the hard particles precipitated, but the washing had to be repeated many times before the mucous membrane could be freed of the finely ground particles of glass it contained. Examined under low power magnification, glass of different colors was clearly shown.

I am reporting this event promptly since it may aid others to diagnose sudden deaths where the autopsy exempts infection. The lesioned mucosa of the stomach and intestine could have been mistaken for the result of coccidiosis. Since bone meal is fed to many animals this discovery seems to impose a responsibility on the Pure Food and Drug Administration.—*A. D. Damman, D.V.S., M.D.V., Enumclaw, Washington.*

A Case of Strongyloides Infection in a Pup

Strongyloides stercoralis infects the intestine of man, dog, fox and cat. The parasitic form is hermaphroditic with a relatively elongated esophagus. The adult parasite penetrates the mucous membrane but on the whole is not highly pathogenic in adult animals. It causes persistent diarrhea in man in warm climates and may affect dogs in the same way. The embryonated eggs hatch almost immediately and the living larvae pass out with the stools. They (the larvae) usually go through two molts before becoming infectious and they migrate in about the same manner as the hookworm (=Ancylostoma).

A case of that infection was identified at the Small Animal Clinic of the Alabama Polytechnic Institute. The subject was a 3-month-old Cocker Spaniel female, weighing but 2½ lb., owned in Auburn and hospitalized for four days. It was the runt of the litter with a history of poor appetite, ocular and nasal discharge and diarrhea. The symptoms were anorexia, discharging eyes and nose, blanched mucosae, diarrhea and normal temperature. The diagnosis was made by detecting the larvae in the feces. The autopsy revealed gastritis but no visible parasites.

The medical treatment given was hexylresorcinol. It was noted that before this drug was given there were numerous live larvae in the feces, and that 18 to 21 hours showed numerous dead as well as live ones.

The Foreign Body Hazard in Dogs

Setter Swallows Stick Six Inches Long.—Presented for treatment with an indefinite history the dog showed abdominal distress, pale mucous membranes, labored breathing, a temperature of 103 F., and the general appearance of approaching death. The x-ray examination was negative. The autopsy revealed the presence of a thin stick of wood, six inches long, that had penetrated the esophagus in the mediastinum, the diaphragm and the anterior face of the liver.

Dog Swallows a Rubber Ball.—A dog (breed not given) with a history of vomiting for a week was suspected of having an intestinal obstruction. Palpation revealed the presence of a foreign body and the x-ray examination confirmed the diagnosis. The operation disclosed half of a rubber ball in the duodenum, which was removed surgically. With the aid of liberal doses of dextrose and salines and a sprinkling of sulfanilamide over the intestine of the region, the intervention was successful, notwithstanding that obstructions of more than 48 hours duration are known to be bad surgical risks.—*S. W. Stiles, D.V.M., Quarterly News Bulletin, Maine Veterinary Medical Association.*

Bovine Tuberculosis Eradication Stable

The stability of results obtained in the eradication of bovine tuberculosis after 23 years of nation-wide effort by the federal and state veterinary service (plus practitioner participation), seems to be incontestable. Out of 238,000 cattle tested with tuberculin prior to interstate shipment, only 0.01 per cent reacted. Inasmuch as these cattle originated from widely scattered places and were not selected "to prove the case," the figure is proof that the time, money and effort spent in bovine tuberculosis were not spent in vain. The figures are taken from a report of A. E. Wight, Tuberculosis Eradication Division, of the U. S. Bureau of Animal Industry, dated March 1, 1942.

An Outbreak of Paratyphoid in Guineas*

In October 1941, a live guinea was received from near Merchantville, N. J. The owner said the guinea was 3 months old and that during the preceding six weeks 60 of the flock had died. The symptoms reported seemed to be practically the same in all of the cases: drooping wings, huddling, discharge from the eyes and nose. Dribbling saliva, throwing the back, and sometimes clenching the claws were evident in most of the affected birds.

The specimen showed watery eyes, marked distention of the infraorbital sinuses, slobbering from the mouth and bubbling discharge from the nares. A more or less clear mucus could be squeezed in quantity from the nasal cleft and external nares. On opening the sinuses they were found to be filled with a yellowish mucoid exudate. Cultures were made from the exudate after wiping the area over the sinuses with alcohol (70%), searing with a red hot iron, making an incision directly into the sinus with a sterile scalpel and streaking agar plates with a sterile loop inserted into the sinuses. A pure culture was obtained which on preliminary examination seemed to be a paratyphoid organism. Because of the apparently local nature of the infection, no cultures were made from the internal organs.

A series of fermentation tubes were prepared. The organism was found to produce acid and gas on arabinose, sorbitol, trehalose, dextrose, galactose, levulose, maltose, mannitol, rhamnose, and xylose. Adonitol, erythrityl, dextrin, amygdalin, inulin, melitose, raffinose, salicin, and soluble starch were not attacked.

A subculture was sent to P. R. Edwards, University of Kentucky, who identified the organism as *Salmonella bredeney*. According to a check list of bacterial diseases published in the *Journal of the American Veterinary Medical Association*,[1] paratyhoid infection has not been previously reported in guineas. *S. bredeney* has been found in turkeys but not in other birds.[2]

*Journal series paper of the New Jersey Agricultural Experiment Station, Rutgers University, Department of Poultry Husbandry.

[1]Appendix to the report of the Committee on Poultry Diseases, seventy-seventh annual meeting, the JOURNAL, xcvii (Nov. 1940), pp. 515-526.

[2]Dr. Chas. H. Cunningham reported the isolation of *S. bredeney* in a paratyphoid infection in quail chicks. The JOURNAL, xcix (Sept. 1941), p. 217.

Dermerol

Dermerol is a new synthetic, pain-killing narcotic, a substitute for morphine, habit-forming but devoid of the action that causes physical craving in the addict. The discovery was announced at the meeting of the Federation of American Societies for Experimental Biology (Boston).

The dose of dermerol is somewhat larger than that of morphine, its narcotic effect starts within 15 to 20 minutes, and the action lasts about six hours. The drug is of German origin and was only recently manufactured in the United States. It will not be available until approved by the Food and Drug Administration. Experiments carried out on animals forecast its usefulness in veterinary medicine. The facts were announced in the April 4 issue of *Science News Letter*.

In turning all war effort to man killing at the expense of killing germs and insects, man is apt to lose his freedom. Materials needed to war on insects are getting scarce, reports state. The danger lies in the shortage of arsenic, rotenone and pyrethrum.

Melanocarcinoma of the Iris in a Dog

FRANK BLOOM, D.V.M.
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PRIMARY MALIGNANT neoplasms of the iris occur with great infrequency in animals. Nicolas[1] describes several cases in horses but none in dogs. Fuchs[2] and Parsons[3] describe the frequent presence of brownish nodules and occasionally brownish tumors on the pupillary margin of the iris in the horse which are usually benign but may become malignant. Veterinary textbooks on canine medicine and pathology likewise make no mention of such tumors affecting the dog. In man, the most common tumors of the uveal tract (chorioid, ciliary body and iris) are melanomas and melanosarcomas. Of the domesticated animals, it appears that the horse is prone to develop primary tumors of the iris. Recently I encountered a primary melanocarcinoma of the iris in a dog which because of its rarity in this animal was thought worthy of publication.

Case Report.—The animal was a male, 1½-year-old Chow. When nine months old a growth was observed in the right eye. A veterinarian consulted, sent the dog to an oculist. A diagnosis of iris tumor was made and the tumor disappeared completely after two x-ray treatments had been administered by a radiologist. Several months later the tumor recurred and a series of six x-ray treatments failed to decrease its size. When the oculist recommended removal of the eyeball the animal was brought to me for consultation.

Examination with the naked eye and ophthalmoscope revealed a dense, pale-pink, smooth-surfaced, vascular growth occupying the lower two thirds of the anterior chamber. The tumor was roughly dome-shaped with its base at the lower border of the iris. It was 14 mm. wide, 12 mm. high and 5 mm. thick at its upper portion and tapered to a depth of 1.5 mm. at the iris angle, completely filled the iris angle, and was attached to the anterior surface of the iris at its ventral border. At and slightly above this junction, it was studded with numerous brownish-black pigment granules. No other abnormalities were observed in the affected eye. The left eye was normal.

In view of its recurrence following its disappearance from radiation and the known malignant potentialities of such tumors, the eyeball was enucleated on November 7, 1941 on the assumption that the process was still local and that metastasis could be prevented. The animal made an uneventful recovery and up to the present appears well.

HISTOLOGIC EXAMINATION

There was considerable variation in type and arrangement of the tumor cells. At the iris angle, many cells were characterized by round, oval and elongated nuclei and spindle or rectangular shaped cytoplasm with branching protoplasmic processes at their extremities. Other cells were essentially spindle-shaped with scanty cytoplasm. The former were occasionally arranged in palisades forming pseudo-alveoli. The latter often formed whorls and sheets. In the central and peripheral portions of the neoplasm were numerous smaller and larger glandular structures of an alveolar appearance with pronounced epithelial character. Often these had distinct empty lumens which were lined with numerous, piled up, closely packed cells

Fig. 1. Illustrating appearance of right eye containing the tumor.

[1]Nicolas, E.: Veterinary and Comparative Ophthalmology (H. & W. Brown, London, 1929).

[2]Fuchs: Cited by Ewing.[6]

[3]Parsons, J. H.: The Pathology of the Eye (Hodder & Stoughton, London, 1904).

containing oval, hyperchromatic nuclei and a syncytial appearing cytoplasm. Numerous mitotic figures occurred in the alveolar cells but fewer mitoses were present in the other cells. Occasionally, the glandular structures showed a peritheliomatous arrangement by their distribution around blood vessels. Interspersed between the alveolar structures the previously described polymorphous and spindle shaped cells were present and in addition there were areas with a loose, reticular-like network of stellate-shaped cells.

Numerous blood vessels and several small areas of necrosis and hemorrhage were present. Only occasional cells contained pigment, although in several scattered regions there were larger collections of pigment that appeared to be extracellular. Collagen stains (Masson's light green and Mallory's aniline blue) revealed only a slight amount of fibrous connective tissue which appeared to arise from the adventitia of the blood vessels and a complete absence of a capsule and trabeculae.

Fig. 2. Section of enucleated eyeball depicting the anatomical location of the neoplasm.

Other tissues of the eye showed no abnormalities microscopically.

COMMENT

While opinions differ on the histogenesis of melanotic tumors of the iris, it is commonly believed that they arise from the chromatophores of the iris stroma (Parsons,[3] Friedenwald[4]). The observations of Gilbert[5] suggest that the pigmented epithelial cells of the posterior surface of the iris may extend into the stroma of the iris. In the melanotic tumors of man, pigment may be slight or absent. Despite the paucity of pigment in my case, many of the polymorphous cells that roughly assumed a palisade form closely resembled chromatophores. The spindle-shaped cells forming whorls and sheets appeared to have lost the cytological characteristics of the chromatophores and resembled the primitive pigment-bearing cells that are found in the chorioid of the embryo. The latter bore a striking resemblance to the ordinary spindle-cell sarcoma. The alveolar structures with pronounced epithelial characteristics have been described in man by Ewing[6] and other writers. However, these gland-like structures were unusually defined in my case and in association with the other morphologic characteristics of the tumor, were the basis for the histologic diagnosis of melanocarcinoma.

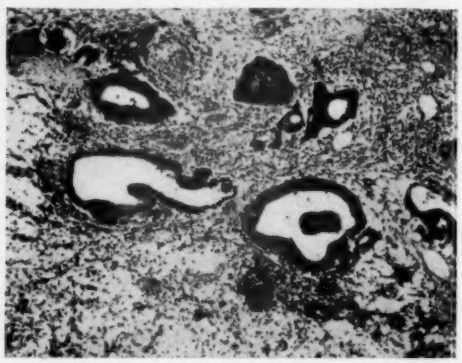

Fig. 3. Low power photomicrograph showing the histologic structure described in the text. Hematoxylin and eosin (x 71).

Since from the clinical standpoint such tumors usually metastasize early and widely, the best procedure is to enucleate the eyeball when recognized. Only rarely will an iridectomy suffice, that is, only when the growth is small, situated near the pupil, and it is possible to avoid handling and crushing the tumor.

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[4]Friedenwald, J. S.: in Penfield, W.: Cytology and Cellular Pathology of the Nervous System (Paul B. Hoeber, N. Y., 1932). vol. 3.

[5]Gilbert, W.: Pigment anomalies. Arch. f. Augenh., lxxxviii (1921), p. 143.

[6]Ewing, J.: Neoplastic Diseases (4th ed., W. B. Saunders Co., Philadelphia, 1940).

CURRENT LITERATURE

ABSTRACTS

War and the Health of Animals in Canada

Being proud of the record made during World War I, the profession regrets that the Royal Canadian Army Veterinary Corps was disbanded. Although there are no horsed units in the Canadian Army, everything has been done to inform the authorities about the wide field of usefulness the veterinary profession covers. Under the direction of the Surgeon General, in lieu of the Quartermaster General, the Veterinary Corps of the United States Army appears to be flourishing. Besides caring for the health of animals, it inspects meat and animal foods, milk, poultry, eggs and also forage. The need of such a service is evident. In Newfoundland, for example, the U. S. Veterinary Corps has undertaken the tuberculin testing of cows supplying milk to their forces as well as inspecting milk and meat supplied to their troops in the territory the United States has leased for defense.

There is much to be said in regard to the handling of these sanitary problems by competent veterinarians. As matters now stand there is no opening for Canadian veterinarians in the armed forces and no specialized corps attached to them. The veterinarian is in the same position as the general population, and since veterinarians as such have not entered the Army in large numbers, there would be more of them available for the positions of veterinary inspectors in civilian life, but on account of reduced appropriations for the Health of Animals Division, the employment of more of them is prevented. There are but 80 part-time veterinary inspectors throughout Canada and the loss of them is felt in the eradication of tuberculosis. With the exception of hog cholera, fortunately there has been no serious diseases of livestock since the beginning of the war. The cost of handling hog cholera under the slaughtering policy has been but 4½ cents a head for the hog population, while in the United States the figure is 50 cents a head.

There has been a great increase in pork imported from the United States since much of the Canadian pork goes to Britain. Hog production has greatly increased in the prairie provinces and the quality has not been lowered because of wartime demands. Regardless of these increased demands, the number of veterinary inspectors has been slightly decreased. So, in spite of not participating in the operations of the armed forces veterinarians are undoubtedly doing important work. [*Cameron, A. E., Veterinary Director General: War and the Health of Animals Division, Canadian Journal of Comparative Medicine, vi (Feb. 0942), pp. 46-49.*]

Insulin Increases the Incidence of Diabetes

Notwithstanding the extraordinary benefits victims of diabetes mellitus derive from the use of insulin, the incidence of the disease has greatly increased since its discovery. As Wilder of the Mayo Clinic asserts "Diabetes was encountered infrequently before 1920."

The increased prevalence is attributed to heredity. Diabetics live on and breed susceptible offspring. There appears to be a special diabetic inheritance, if not direct, then through inherited endocrine imbalance. Inasmuch as depancreatized dogs* can be cured by pancreatic graft, that measure is recommended as the right treatment of diabetes, the treatment that would decrease the extension of the disease in the race. That no studies of this prospect have been made is obviously due to the wonderful success of the insulin treatment in removing the sad results of diabetes in former days. [*Tuttle, George H., M.D.: The Cure of Diabetes a Surgical Problem, Medical Times, lxx (March 1942), pp. 79-80.*]

Milk and National Defense

Owing to new knowledge of nutrition, milk is more widely used than formerly. Recognition of its value by military authorities, as well as by the rank and file of the armed forces, has placed milk in a stellar rôle. The demand is unprecedented and sections of the country are experiencing a shortage of fluid milk. Production for 1942 is expected to pass all previous records, although the increase must be achieved in the face of shortages of certain material used for dairy equipment. The manufacture of dairy equipment is regarded as a vital civilian industry by the War Production Board and is en-

*Minkowski, University of Berlin, 1896.

titled to some degree of priority. Before war was declared, Surgeon General Parran called attention to the need of an unobstructed and increasing flow of milk and dairy products.

Although the primary object is to win the war, there is no justification on the part of milk dealers to take undue advantage of the situation, such as suspending the use of sanitary cover caps, and thus jeopardize the safety of milk. In short, because of the importance of milk and its increased use, enforcing sanitary regulations is all the more necessary as a wartime precaution. [*Fuchs, A. W., U. S. Public Health Service: Milk Control in the Defense Program, Public Health Reports, lvii (March 20, 1942), pp. 422-431.*]

National Defense

Veterinary medicine is looming large in the picture of national defense and the vigilance of veterinarians has become universally recognized as the reason for the country's relative freedom from serious outbreaks of animal diseases. No greater fortune could come to our enemies than to have one of the main sources of the human food supply devastated by diseases; and much is owed to veterinarians for the wholesomeness of animal foodstuffs, not to mention such contributions to human welfare as the work of Maurice C. Hall on the treatment of human hookworm infection. The services of the veterinary practitioner on the line of duty were never adequately evaluated. The progress of veterinary medicine during the past 35 years has been amazing and the livestock industry has been the beneficiary. But for the advancements made in veterinary medicine, America would not be what it is today. Veterinary colleges afforded the professional training required and credit also is due those engaged in ethical, commercial pursuits. The excellence of their staffs, their products and their literature and the business-like management of their enterprises contribute to veterinary effectiveness. "Our hats are off to them."

Let the young student of the present resolve that he will do as well as his predecessors. The scope of veterinary medicine is tremendous and its promise of future usefulness is unequalled in any other branch of science. When peace again comes upon the world, the veterinary profession will rank high for its contributions to the country's welfare. *Dykstra, R. R., D.V.M., Dean, Division of Veterinary Medicine, Kansas State College: National Defense, Veterinary Student, iv. (1942), pp. 65-66.*]

Cross Infection of Gapeworms in Robins and Chickens

Out of 76 robins collected at Lincoln, Nebr., and examined for gapeworms, 33 per cent were found to be infected. The worms could not be distinguished morphologically from the gapeworm of the chicken but several attempts to infect chickens with the gapeworm of robins failed. However, when eggs from the robin worms were incubated in earthworms of the species *Eisenia foetida* and fed to chickens, one out of six of the chickens was thus infected. When robin gapeworm eggs, kept in cold storage for six months, were fed to chickens two out of six became infected. The author does not insist that cross infection occurs naturally. [*Ripple, R. C., University of Nebraska: Studies on the Gapeworm Syngamus Trachea (Montaga, 1911) in Robins and Chickens, Journal of Parasitology, xxvii (1927), pp. 369-374. Abstract, E.S.R. March, 1942.*]

Diseases of Brooder Chicks

Diseases of brooder chicks may play a vital part in adult mortality and in many instances they may be traced back to faulty nutrition of the parent stock. Thus controversies arise between producer and purchaser of chicks. Proper housing, floor space, temperature and feeding prevent chick mortality. Pullorum disease, despite the control measures practiced, is the most serious of these diseases. The mortality may reach as high as 90 per cent during the first 21 days. When caused by heavy embryo infection the course is rapid and mortality high but the cause may come from infected incubators, brooders, and equipment and may be brought in on the shoes of the caretakers. The symptoms are not uniform. Pasting of the vent is not diagnostic as it may be absent. Sudden deaths, losses the first few days of life, droopiness, ruffled plumage, huddling, gasping, shrill cheeping, thirstiness, general unthriftiness, and chalk-like liquid droppings are the usual chain of symptoms. But, isolation of the organism may be required to confirm the diagnosis. There is no medicinal treatment of value in checking the course of the disease or its spread to other chicks. In building up resistance buttermilk, sour milk and other milk products have value. Mortality may be decreased somewhat by raising the temperature of the brooder 5 to 10 degrees. Antiseptic medication of the drinking water may be of value in preventing infection from that source.

Prevention is best accomplished by eliminating infected hens by means of the agglutination test, preferably made when the hens are in 25 per cent production. Paratyphoid, omphalitis, epidemic tremor, nonspecific diarrhea, brooder pneumonia, moniliasis (thrush or sour crop) are described. [*Lee, C. D., D.V.M., M.S.: Diseases of Brooder Chicks, The North American Veterinarian, xxiii (Apr., 1942) pp. 265-270.*]

Opium Smuggled in the Rumen of Camels

Opium and other narcotics are transported illegally from India to Egypt in the stomach of camels. The drugs are sealed hermetically in metal tubes, 15 x 4 cm., and obviously given to camels in the way one gives a bolus. Twenty-seven such containers were removed from the rumen of one camel by officers who detected the crime. From 18 seized, over 17 kg. of hashish and 62 kg. of opium valued at £2,200 were recovered. Each container weighed 250 Gm. An interesting phase of the report is the camel's ability to swallow and carry that much weight in the rumen and survive the overland trip of more than a week. The camels, of course, are slaughtered at the end of the journey to recover the cargo. The traffic is said to be tremendous and since a large number of camels pass through the quarantine stations, the hope of stopping the practice is to install x-ray apparatus in order to detect the presence of the drug in this strange vehicle. [*Farbrother, E. S., I.V.S.: Smuggling Opium and Charas in the Stomachs of Camels, The Indian Veterinary Journal, xviii (Nov. 1941), pp. 177-178.*]

BCG in Cattle

After a trial of BCG (=Bacillus-Calmette-Guerin) lasting 12 years in a herd of British Holsteins, the owner concluded that the trial was a costly undertaking as the cattle would not pass the tuberculin test and were, therefore, depreciated in value. The owner attended the International Veterinary Congress held in London in 1930 where an Italian spoke strongly in favor of the vaccination and Dr. Watson of Canada announced that it did not immunize cattle. Six years ago the owner visited Dr. Watson's laboratory in Ottawa where he was shown tuberculous lesions from vaccinated animals. Quoting: "After trying the vaccine for 12 years, I reluctantly came to the conclusion that it did not give any immunity." [*The Veterinary Record, liv (Jan. 17, 1942), p. 48.*]

Nutrition's Part in War: Milk

The commissioner of health of New York City felicitates the producers of certified and other milk for the part they are playing in defense of the country, meaning in the main that much depends upon the people's nourishment, which milk supplies in abundance. The excellent supply of milk in New York City is owed, not only to milk itself, but also to the fine equipment and personnel furnished by the dairy industry.

The milking machine is causing the health department some difficulty. Some are not up to standard and there are also untrained men who are replacing those experienced, who are drafted into the military service. Certified milk producers have the finest equipment but it is now necessary to make it last longer. Here, the problem of rubber rationing enters the situation and it may be necessary to deliver milk every other day in order to get the consumer in the habit of going to the store to buy his milk. It will require the leadership of the producers of certified milk to effect the changes. While such milk-borne diseases as typhoid fever, scarlet fever and other diseases have not occurred in New York City for a long while, such visitations would be serious if they occurred now. Nutrition will play an important part in this war and one factor will be increased use of milk; and it must be safe. [*Rice, John R., M.D., Commissioner of Health, New York City, Certified Milk, xvii (March, 1942), pp. 3 and 22.*]

Calfhood Vaccination

Since the relationship of brucellosis in the different species of animals and man was established by Alice Evans we now have a group of diseases caused by organisms of the same genus. The group includes brucellosis in swine and undulant fever of man. Vaccines have been tried ever since Professor Bang discovered the organism bearing his name. In Great Britain it was shown that the use of live organisms reduced the incidence of the abortions in cattle, but being used indiscriminately, carriers were produced to such an extent that 35 per cent of the cattle of that country give positive reactions to serological tests. The same practice was repeated in this country and probably is responsible for the spread of the infection and caused active abortions. Reduction in the incidence of the disease through the use of vaccines was reported by research workers in this country. It was, however, soon discovered that organisms not modified caused infection that was harbored for a period of years. Later, strain 19, a culture that has protective value without inducing infection was developed. The strain, almost accidentally discovered by Buck and Cotton, is now widely used for calfhood vaccination along with programs for controlling the disease. The discovery was made in 1926 but it was not until 1935 that the Bureau decided to test the vaccine on a large scale in the field. About 25,000 calves were vaccinated in this work. While two per cent aborted in the first attempt, the number was later reduced to ⅛ per cent.

A test of commercial vaccines made in 1938 showed that 45 per cent were not satisfactory for several reasons: insufficient number of vital organisms, the use of rough strains and contamination. Willingly the commercial laboratories submitted their products to the Bureau for approval. The result of the coöperation was the production of the vaccine now in general

use. Similar improvements have been instituted in Great Britain.

Strain 19, after critical tests, is now a part of the program for eradicating the disease and inasmuch as the Bureau has so successfully eradicated so many grave diseases from farm animals, the prospects in this instance are encouraging. [*Eichhorn, Adolph, D.V.S.: Calfhood Vaccination, The Iowa Veterinarian, xiii (March-April 1942), pp. 3-9 and 14-16.*]

Women Veterinarians

The author, representing the Society of Women Veterinary Surgeons, a division of the National Veterinary Medical Association of Great Britain and Ireland, suggests reforms in the educational system favorable to the future status of the pet animal doctors. In its present aspect, veterinary education deals with animals of economic value but even here the views of the woman group should be helpful, and when victory is achieved the interest in small animal practice will return. It should not be neglected and turned over to welfare societies and their unqualified personnel. In taking a long view of the situation, submerging small animal medicine will not affect those already qualified but will have a detrimental influence in the future. Someone should take action before it is too late, since all attention in the colleges now goes to the study of essential animals. The college course should be split so that a specialized course is given in the later years, or post graduate to the usual diploma. The latter would have the advantage that the upper classmen would not feel that they were encumbered by a number of potential "dog doctors" not interested in the aspects of veterinary science that are of importance to the agricultural future of the country.

In regard to discrimination against women veterinarians on account of their sex by the National Registration for Employment and the rulings of the Ministry of Labor, rather than to change from an occupation for which they have qualified, the plea is for placing them with the Ministry, in laboratories, or with general practitioners requiring a secretary, assistant, manager, or *locum*. The Society will keep a register of those available for such positions and it is hoped that a register will be kept also of practitioners having openings for such employees. The author emphasized that the women veterinarians are deeply concerned in all matters pertaining to the veterinary profession.

PRESIDENT WOOLDRIDGE'S REMARKS

Drawing attention to the possible neglect of small animal medicine is timely, although it has been necessary to emphasize improvement of our agricultural work, with apparent neglect of small animals, so that the government may better appreciate what the veterinary profession can do in its sphere. The prospect of small animal practice being usurped by animal welfare societies is recognized, but if veterinarians will do their jobs properly there is less danger in the usurpation. Much of the danger could be overcome by fair and courteous treatment of the public, and legitimate treatment of the animals of the poor through proper organization of the profession.

In regard to discussions before the Association, some men stand and talk nonsense for hours while the women, by preparing what they have to say, usually talk intelligently and aptly. A more scientific attitude toward their (women's) problems and the writing of reports for publication would be helpful to the whole profession. [*Jushua, Joan A., M.R.C.V.S.: The Aims and Outlook for the Woman Veterinary Surgeon, The Veterinary Record, liv (Jan. 31, 1941), pp. 62-63.*]

Brucellosis Spondylitis in Man

Farmers, veterinarians, butchers, packing house employes and consumers of raw milk, affected with backache as the chief complaint, should be suspected of having brucellosis spondylitis, granted that other supporting factors are present. The treatment has consisted of measures directed at the systemic infection (mercurochrome, acriflavine, metaphen, vaccines and serums). Surgical treatment (drainage), spinal fusion, infra-red and Roentgen rays, and local diathermy have been employed. Because remissions are numerous, treatment is difficult to evaluate. The afebrile intervals may be mistaken for cures. Brucellosis may pass into a latent asymptomatic phase and a diagnosis based only on fever and agglutinins is open to question. These are presumptive evidence, however. Three cases of brucellosis spondylitis treated by physically induced hyperpyrexia at the Mayo Clinic since 1938 are reported. These cases were reported because brucellosis is not commonly regarded as a cause of spondylitis and because gratifying results were obtained from the treatment. The infectious process was thought to be arrested by the induced hyperpyrexia, since the prompt relief could not have been coincidental to spontaneous remission. The results obtained are illustrated with comparative roentgenograms.

Since the report is intended solely to introduce physically induced pyrexia, though 12 references are cited, the authors may be pardoned for omitting the early work on the vertebral localization of brucellosis in animals. [The article, however, serves to remind one of the early work by veterinarians on the isolaton of *Brucella abortus* in the spinal column of swine and laboratory animals: W. E. Cotton, 1922; L. T. Giltner, 1930; W. H. Feldman and

C. Olson, 1933; the exhibit at the Pathological Laboratory of the U. S. Bureau of Animal Industry in Chicago of Brucella spondylitis of swine. One of these specimens was mounted by the late L. Enos Day for the educational exhibit of the AVMA, Palmer House, Chicago, 1933].

The diagnosis of the three treated cases was based upon the history of remissions, high rate of sedimentation and high titer of specific agglutinins in the patients' blood. Moreover, the common forms of spondylitis do not respond to that treatment. [*Phalen, George S., M.D., Prickman, Louis E., M.D., and Krusen, Frank H.: Brucella Spondylitis, Treatment by Physically Induced Hyperpyrexia. J.A.M.A., cxviii (March 14, 1942), pp. 859-862.*]

Sulfaguanidine Harmful to Blood Vessel Walls

In the course of experimental work with 7 young rats fed a vitamin-B-complex-deficient diet containing 1 per cent of sulfaguanidine, workers of the U. S. Public Health Service observed sclerotic changes in the vessel walls not previously mentioned in experimental animals. The vessel walls were often replaced by a glassy material which was metachromatic and slightly basophilic with eosin or methylene blue. The authors do not know whether the condition is based upon a dietary deficiency induced by sulfaguanidine or whether a compound derived from it directly caused the sclerosis. [*Daft, Floyd et al.: The Occurrence of Hyaline Sclerosis of Blood Vessels in Rats on Sulfaguanidine, Public Health Reports, lvii (Feb. 15, 1942), pp. 217-218.*]

BOOK NOTICES

Rabies

Just off the press is a monograph by a scientist of the Rockefeller Institute of Medical Research (New York) who is well known for his researches on the potency of rabies vaccine. The value of this book lies in the fact that none will question the author's knowledge of the subject nor the importance of his task. The text material is factual, up-to-date, and was written without wasting words on unproved theory. Veterinarians, physicians, public health officers and dog fanciers looking for bare fact, clearly told, will not be long in adding this book to their collection, for, as the author emphasizes, rabies control has become a problem on which the public wants correct information. The remark that the public becomes coöperative in disease control only when science has mapped out an orderly program is a truism of the understandable sort in the veterinary profession and certainly is a good reason for getting the whole, unvarnished truth about rabies between the covers of a book at this moment.

Here, rabies is described as a community problem of well-known importance upon which the people want information on two points, namely: diagnosis and control. The book is intended to fill that need and does so in words backed up by controlled experimental work, not by the befuddling theses which have confused the issue ever since the early days of the Pharaohs.

The opening gun is a masterpiece in well-told semiology: "A dog comes down the street, running crazily this way and that, bumping into objects as if blind or dazed, frothing at the mouth, snapping viciously yet aimlessly at man, beast, stick or stone. Only a short time ago he was somebody's pet seemingly normal." For the furious phase of rabies, who can say more in that many words? Elsewhere, the vague prodrome of furious and dumb rabies and the paralytic finale are likewise graphically explained for the uninformed or unsuspecting owner of dogs.

The chapters on (1) the properties of rabies virus, (2) the way the virus causes the disease, (3) the slight tissular damage it does, and (4) the methods of diagnosis, refresh the mind on the fine work of Koch, Pasteur, Babès, Negri and the more modern authors in the field of virus pathology.

Drawings, maps and tables are used to clarify and abridge the text material. One is struck with the drawing entitled "Cycle of Rabies Virus" which is a lesson on pathogenesis of the sort that leaves a permanent impression—even the layman will understand what the bite of a mad dog does.

The maps and tables showing the distribution and the incidence of rabies in the United States are precious information, and their value is beyond estimation as a guide to the veterinary service of this country which after all is the "responsible party."

The chapter on the prevention of rabies before exposure—an extremely delicate subject to treat—stripped of all ambiguity is the old story of controlling dogs, the main reservoir of the virus and the main instrument of dissemination. Suavely, the author recommends (1) reduction of the amount of rabies virus in nature and (2) increasing the resistance of man and animals to the disease (which can be summed up in a few words: Kill the stray dogs and vaccinate the human and animal population). But, inasmuch as a sentimental factor (dogs) enters the program, the application of these principles is easier said than done. Here, the author makes a plea for (1) a better understanding of rabies, (2) conscious support of health officers, (3) coöperation of

the community and individuals, (4) reporting suspicious dogs, and all dog bites, (5) giving dogs proper care and medical attention, (6) providing money and authority for efficient collection of stray dogs and cats, and (7) obeying the regulations regarding the confinement of dogs.

The chapters on the evaluation of rabies vaccination and prevention following exposure we leave for the most critical reader to judge. They are the "meat" of the book where the author summarizes the details of his personal researches and the knowledge accepted and consecrated in medical literature.

Four appendixes give samples of laws regulating the disposal of rabid, unowned, and vicious dogs. One appendix contains 13 tables reviewing experiments on the vaccination of dogs, mice, guinea pigs, monkeys and rats artificially inoculated with rabies virus in different ways (subcutaneous, intramuscular, intracerebral). These contain the scientific facts the author's researches have established.

Accuracy granted, the diagnosis and the control of rabies must henceforth be based upon the facts this book contains. No veterinarian can well afford to delay reading and studying this excellent volume. [*Rabies by Leslie T. Webster M.D., The Rockefeller Institute of Medical Research, New York. Cloth, 168 pages. The Macmillan Company, New York. Price $1.75.*]

Rat Proofing Buildings and Premises

The principles of modern building construction oppose everything favorable for the rat, arch-enemy of human effort. Trapping, flooding, ferreting, poisoning, fumigating, limes, lures and repellents, and local, state and national antirat laws are less important than keeping down breeding by the kind of rat proofing upon which the ultimate solution of the rat problem depends. Rat proof farm buildings cost less than the damage rats do. Nevertheless, in the interim, means of killing rats are essential.

The bulletin is profusely illustrated with drawings, showing the specifications for ratproof construction and with pictures of buildings, woodpiles and dumps which furnish breeding places and shelter for this abhorrent rodent. Man has as many rats as he shelters and feeds. Corncribs, granaries, barns, stables, poultry houses, piles of fuel and lumber, straw and manure, and even the residence are supplied galore as if intended to step up rat production. [*Conservation Bulletin 19 by James Silver and W. E. Crouch, Fish and Wildlife Service, U. S. Department of the Interior. Government Printing Office, Washington D. C. 26 pages. Illustrated. Price 10 cents.*]

The Microbe's Challenge

To get at the bottom of things microbial, one should read *The Microbe's Challenge*, differing mainly from the style of Paul de Kruif in that it misses no main point of historical or scientific interest. Reading this book is a gratifying experience. Any of its chapters will furnish a few moments of profitable entertainment.

The gypsy life of the microbe, its ways of living, its adaptation to the changing of hosts, its uses and harm in nature, its transportation by land and air and sea to the four corners, its ways of offense and defense, its Nemesis of the laboratory since Leeuwenhoek, the birth of the germ theory of disease and of bacteriology, the romances of Robert Koch and Louis Pasteur and their setbacks, the lesson Jenner had taught, and many other catchy captions which refresh the mind and leave impressions, await the reader of this book. The first two chapters—64 pages—will fascinate the modern worker in the field of medical science who may be callous to the birth of his art.

"No Ticks, No Texas Fever"

Chapter III, entitled "The Way of the Parasite," reminds man that he himself is a parasite during the ten lunar months of his maternal existence, differing at that stage but slightly from the tapeworm. To the veterinarian the vital part of this chapter is the story of Smith, Kilbourne and Curtice who caught the tick red-handed as the cause of Texas fever and mapped out a broad and new field for medical research by discovering insects to be the hosts of microbial life, and transmitters of grave infections, previously baffling.

The titles of the other chapters indicate the author's tempo and rhythm, to wit: *Changeable Microbes, Jekyl and Hyde Types, Chemistry and Behavior, The Borderland—Animate and Lifeless, Virus Riddles, Little Microbes,—What Next?, Microbes Run Amuck, Epidemics to Order*, and *The Challenge.*

In the last chapter—The Challenge—the world is reminded that while microbes in general are amenable to control, those carried from victim to victim by insects resist man's efforts to control them, despite the fierce attacks of the bacteriologists and sanitarians. Here an exception might have been made of Texas fever of cattle which *is* yielding to a human effort.

A colorful book of the upper cadre—a liberal education in utilitarian microbiology for the student of medicine, for the scientists as an *aide memoire* and for the unsophisticated laymen interested in his invisible *entourage.* [*The Microbe's Challenge, by Frederick Eberson, Ph.D., M.D., Director of Laboratories, Pathologist, Gallinger Hospital, Washington, D. C.*

Frontispiece of Louis Pasteur. Cloth. 354 pages. 1942. The Jacque Cattel Press, Lancaster, Pa. Price $3.50.]

Encephalitis: A Clinical Study

Through researches of but recent months, the demarcation between the infectious encephalitides in man and animals which made their debut in epidemic form during World War I in the Balkans, has been narrowed down to closely drawn parallel lines and their incidence has grown by leaps and bounds. A book by capable authors reviewing the sum of knowledge on the subject, is, therefore, a timely and welcome addition to the literature of medical science, for, no less than the physician, army medical officer, and public health official, veterinarians now seriously engaged in safeguarding the nation's food production, will be gratified at this timely effort to cover and clarify the deluge of material published on encephalitides in a text of a single volume. The book is written by authors of the upper bracket who have studied the elusive nature of this relatively new malady ever since it first came into the medical perspective.

The foundation of this book was laid in 1927 through the generosity of Mr. William J. Matheson, founder of a commission for encephalitis research bearing his name—the William J. Matheson Commission for Encephalitis Research. Since that time, laboratory and clinical investigations have been extensive. Although sporadic cases were recognized earlier, the first epidemics of record occurred in Rumania in 1915 and in France in 1915-1917. Since then the disease has become actually pandemic throughout the world. In America, the malady was recognized at Paris, Ill., in 1932 and in St. Louis in 1933—the so-called St. Louis type. The St. Louis outbreak bears the distinction of having furnished the means of isolating a virus as the etiologic agent. In subsequent researches, the viruses of the Japanese and Russian forms and of the eastern and western equine encephalomyelitis were discovered. In later years of the 1930 decade, the equine virus was isolated in the brain of human victims, and from these findings the present known interrelationship of certain human and animal forms was established; hence the importance of this book to investigators and practitioners of veterinary medicine. Similar analogies have been demonstrated between Australian X disease and looping ill of sheep.

The book contains nine chapters covering in detail the whole gamut of available facts showing, without omission, the place encephalitis occupies in higher life. The author and her collaborators have written a precious volume that should be well received and eagerly sought by workers in all branches of the veterinary service. [*Encephalitis: A Clinical Study by Josephine B. Neal, A.B., M.D., Sc.D., F.A.C.P., Clinical Professor of Neurology, College of Physicians, Columbia University, and collaborators. 563 pages. Cloth. Grune & Stratton, New York. 1942. Price $6.75.*]

The Year Book of the American Public Health Association

This book is a supplement of the monthly journal of the Association, summarizing the activities of a year which was famous for public health work owing to the preparations for war. The dislocation of a large part of the population created new problems of hygiene, and made necessary the training of new personnel to aid the seasoned workers; and it brought about changes in the aspect of industrial sanitation, housing, milk production, and disease control measures conforming to the developments of medical science. Advances made in the knowledge of rheumatic fever, poliomyelitis, encephalitides, the chemotherapy of pneumonia and the wider interest in venereal diseases are pointed out. The greatest progress, however, was made in the field of nutrition wherein the gap which once separated the laboratory and clinic has been narrowed.

The Association was founded in 1872. While carrying out its constitutional mandate to promote public and personal health, it has seen many changes. Chapters on industrial sanitation, water supply, food utensil sanitation, bottled beverages, food values and sanitary control of some special dairy products, food values in infant feeding, anthrax in Philadelphia, pneumoconiosis, and air analysis, indicate the scope of the text.

The chapter on Anthrax in Philadelphia is a reminder that this fatal disease of farm animals is, indeed, a public health factor. For nine months of 1941 there were 12 cases in that city traceable to animal products (skins, wool, hair). During the last 2¾ years there have been more cases in Philadelphia than during the previous ten years, and that experience is not unique, the committee reports. [*Year Book of the American Public Health Association published by the Association, 1790 Broadway, New York City. 178 pages. Paper.*]

Lane Medical Lectures (1941): The Lymphatic System

Ever since circulation of the blood and its mechanism was discovered and studied by Harvey, Malpighi, Leeuwenhoek and others of the seventeenth century, the march of medicine has felt the need of more knowledge of the lymphatic system. This para-circulatory apparatus was early recognized in mammalian physiology as a vital accessory of the blood circulation—the means of bringing out the dross

and later, as a regulator of the composition and volume of the tissue fluids, and other functions. The dramatic progress of the medical sciences, especially physiology, in the last 20 years has shown that the knowledge of the remote function of the lymphatic system remains inadequate. Students of medicine, thirsting for the details underlying sound medical practices, will agree that the anatomy and physiology of the lymphatic apparatus has not been over-run by medical authors beyond the orthodoxy of the text book, notwithstanding its intimate association with disease.

The book is a transcript of the 1941 series of Lane Medical Lectures which were established in 1896 by Dr. Levi Cooper Lane, founder of Cooper Medical College of San Francisco, now the School of Medicine, Stanford University. The current series is the second on the subject of lymphatics in 46 years. The first was delivered in 1910 and the second in 1941, both by professors of Harvard University. The interim was a 31-year period wherein the study of the lymphatics was more incidental than intensive. On these accounts, books digging deep into the subject are thrice welcome in veterinary medicine. The author divides his text material into five parts:

1) Physiological Principles Displayed in the Evolution of the Mammalian Circulation.

2) Establishment and Characteristics of Capillary Circulation.

3) Appearance and Elaboration of Lymphatic Vessels.

4) Blood, Tissue Fluid, and Lymph as Illustrated by Experiments upon the Heart and Lungs.

5) Relations of the Lymphatic Systems to Practical Problems of Surgery and Medicine.

The striking aspects of this book are (1) the historical interpolations, (2) the methods employed in the study of the circulating fluids, and (3) the application of the facts and ideas disclosed to the practice of modern medicine of which Part 5 is an example. [*Lane Medical Lectures: The Lymphatic System by Cecil K. Drinker, M.D., D.Sc., Professor of Physiology and Dean of the School of Public Health, Harvard University. Stanford University Press, Stanford University, Calif. 101 pages. Illustrated. Cloth. Price, $2.25. Available in paper at $1.50.*]

Survey of Municipal and State Meat Inspection

Bert W. Bierer, Camden, Del., junior member of the Committee on History of the AVMA, has just added another unit to his series of multigrams on American veterinary history which easily outclasses any sketch of the kind ever written by an American author. Bierer was discovered by A. E. Wight, president of the AVMA, 1940-1941, who found a place for him on this dormant committee—dormant because interest in things historical was never implanted into the polioplasm of our veterinary belfry. In other words, authors of veterinary history in this country have lacked the stimulus of waiting readers, vital as it is to the kind of veterinary education sound progress requires. History of our aims and efforts, as a part of the dogmatic veterinary education, has been ditched as surplus baggage and thereby left the doctors of veterinary medicine at the mercy of every Nemesis along the way. Lack of historical knowledge is nothing less than pitiful. Folks hardly know we exist because no portrait of our work was ever painted in our own minds, notwithstanding, as World War II has shown, that the U.S.A. but for our labors, would be in a duce of a fix, probably scanning the horizon of the sea for the arrival of food-laden ships because our people had not had the foresight to watch over the health of farm animals—the main source of the nation's security in peace and war. Bierer's last multigram is not an ordinary document. It is just what the title says—a survey of municipal and state meat inspection made by systematic effort, a questionnaire sent widely throughout the country in search of the information which the author compiled into the first worth while treatise on that subject to be published. A booklet of revealing headlines and graphic text material that (let us hope) should arouse interest in the origin and development of our perspective. [*A Survey of Municipal and State Meat Inspection by Bert W. Bierer, Camden, Del., member of the Committee on History, American Veterinary Medical Association. Published by the author. 21, 10"x7" pages. Well bound in paper. Price, 50 cents.*]

The Dachshund

As these columns have often predicated, the attempt to trace the origin of a breed of dogs is futile with rare exceptions. So, let it suffice to agree with the author that the Dachshund dates back to misty antiquity just like most all of the main breeds of the species—to pre-Christian Assyria, Egypt, and beyond. Picked up in more recent times the author gives an interesting account of this "yard o' dog" in France, England, Germany and America and is able to name prominent figures who were Dachshund breeders and fanciers. The Dachshund Club of America was founded 47 years ago and has been a member club of the AKC since 1895.

This intermediary between hound and terrier is clearly described as to traits, personality, character, disposition and usefulness as hunter and field dog; its future in America, official standards (head, eyes, ears, teeth, neck and body, quarters, legs, feet, gait, color, faults, etc.).

Chapters 28 to 54 cover the usual ground on

the care and management of dogs applicable to all breeds. [*The Dachshund by Grayce Greenburg with a foreword by Kyle Onstott and a publisher's note by Will Judy. 158 pages. Cloth. Illustrated. Judy Publishing Company, Chicago. Price $2.50.*]

Progress

"Progress" is the name of the year book of The Anti-Cruelty Society of Chicago for 1942, giving the roster of officers, statistical report of the work accomplished, the society's equipment, messages from its patrons, list of leaflets on kindred subjects available for distribution, services rendered to the public, and the work done by the technical staff.

Nearly 11,000 animals needing medical or surgical treatment passed through the clinic during the fiscal year. These comprise all sorts of domestic and wildlife creatures.

Throughout, the report reflects a true spirit of coöperation with the veterinary profession. [*Progress, Year Book—1942—of The Anti-Cruelty Society, 157 West Grand Avenue, Chicago, edited by Managing Director, Dr. W. A. Young. 18-page, illustrated booklet.*]

Common Birds Useful to Farmers

A list and description of 26 of the common birds useful to the farmer are contained in an illustrated bulletin issued by the federal Fish and Wildlife Service. In addition to the manner in which these birds serve a useful purpose the veterinarian will be delighted to have on hand a bulletin giving the technical names for these friends of mankind. The author, F. E. L. Beal, is a specialist on the food habits of wildlife. In that rôle he is able to show to what extent the common birds around us devour our insect enemies. [*Conservation Bulletin 18, Fish and Wildlife Service. 23 illustrations. 28 pages. Government Printing Office, Washington, D. C. Price 10 cents.*]

The Pigeon

This book should be of great assistance to the veterinarian who is interested in broadening the scope of his activities. The control of pigeon diseases has been rather neglected by the profession mainly because of lack of interest and scarcity of collected authentic information. The author, who has spent most of his life in raising pigeons as a hobby and as a commercial enterprise has gathered practically everything of value with respect to the pigeon industry. His book of 512 pages contains 785 illustrations and 877 references.

Veterinarians will be interested especially in the chapters on anatomy, physiology, genetics and the nutritional, infectious and parasitic diseases.

Several chapters deal with pigeons from an historic viewpoint; others discuss the pigeon in warfare, in scientific research, their breeds and varieties, practical breeding, behavior, feeds and feeding, housing, commercial squab production, exhibiting, training, racing and an account of pigeon organizations. Even pigeon cookery is included with recipes that suggest greater consideration of the pigeon as a source of variety in human nutrition.

Anyone who thinks of pigeon raising as a minor hobby will be amazed at the worldwide extent of the industry and the various uses of pigeons and their products in recreation, food supply, warfare and for scientific investigation. (*The Pigeon. By W. M. Levi, A.B., J.D. First edition. 512 pages, 785 illustrations. Published by the author, Lemmon Building, Sumter, S. C. Printed by R. L. Bryan Co., Columbia, S. C. Price $10.00.*)

E. A. BENBROOK, *Iowa State College.*

[The signal corps officer, who had charge of the carrier pigeons of the A. E. F. of World War I, writes a veritable encyclopedia on the pigeon that belongs in the veterinarian's library, and especially in the literary ensemble of the veterinary officer, who can no more consistently dodge the carrier pigeon than the private practitioner can dodge farm-poultry practice.—Ed.]

The period of gestation in the chinchilla, rodent of growing importance in fur farming, is 152 to 154 days.—*American Journal of Veterinary Research.*

As of 1942, it is estimated that there are 1,800,000 tractors on American farms.—*Pathfinder.*

The cost of living is higher in Washington than in other large American cities. However, the difference is not great. The cost per family per year is but $5.01 higher in Washington than in New York City, according to the Department of Labor.

C. P. Clausen of the Bureau of Entomology, USDA, reports that a new parasite station has been established in Uruguay to study the boll weevil, pink boll worm, sugar cane moth borer, white fringed beetle and other insect enemies from Latin America. Owing to political conditions similar stations in the Far East have been closed. The Yokahoma staff has gone to Australia and New Zealand. Damage done by insects and fungi in the United States is reckoned at two billion dollars annually.

THE NEWS

AVMA Activities

Program of Seventy-Ninth Annual Meeting to Center on Veterinary Aspects of Food Conservation, Military and Civil Defense Problems

In step with the nation's all-out war effort, the Association's seventy-ninth annual meeting, to be held in Chicago, August 17-20, with headquarters at the Stevens Hotel, will be keyed to wartime problems confronting the veterinary profession.

LARGE ATTENDANCE EXPECTED

There are several indications that registration will be large. In fact, if the experience of other professional organizations which have convened in recent months can be taken as a criterion, attendance at the Chicago session may be larger than normal. Present conditions have increased interest in the profession's problems to such an extent that most veterinarians feel they can not afford to miss this meeting.

As another index of attendance and participation, most of the exhibit space already has been reserved, and the number of reservations is larger than that for the same time last year.

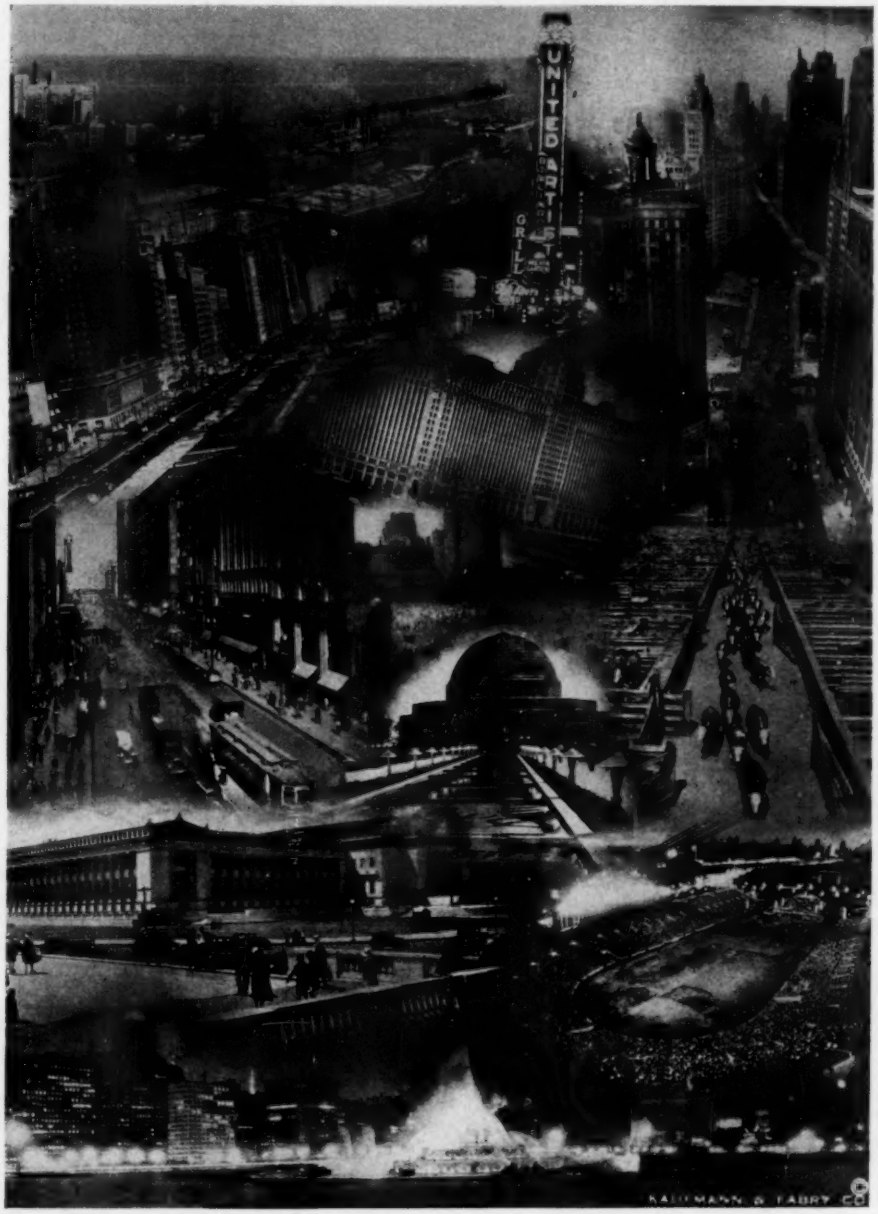
The Committee on Program offers a further indication of interest and participation. This committee reports that many outstanding papers have been volunteered for the section meetings and the general sessions. The former will be held on the mornings of August 18 and 19. The latter will be held on each of the four days of the meeting, with the opening general session on Monday afternoon, August 17. These sesions will be devoted to problems of nationwide interest concerning the veterinary aspects of food conservation and military and civil defense activities. The contributors will be eminent speakers, not only from the veterinary profession, but also from the fields of medicine, nutrition, agriculture and public welfare.

"CLINICAL DEPICTIONS"

Those responsible for planning programs as well as the membership in general feel that, for large groups such as AVMA conventions attract, operative clinics have become outmoded and do not give returns commensurate with the expense and effort involved. For this reason the instructional material offered in past years on the clinical program will be replaced by a series of "clinical depictions," comprising motion pictures and other types of visual presentations on diagnosis, anesthesia and therapy—both surgical and medical. One to two hours each day will be given to this

General Plan of Program (as Adopted by Committee on Local Arrangements, March 27, 1942)

	SUNDAY AUG. 16	MONDAY AUG. 17	TUESDAY AUG. 18	WEDNESDAY AUG. 19	THURSDAY AUG. 20
A.M.	Board of Governors; committees; registration	Registration; House of Representatives	Section meetings (all sections)	Section meetings (all sections)	General session
			Ladies' luncheon		Alumni luncheons
P.M.	Executive Board; committees; registration	Opening session	General session; Women's Auxiliary	General session	House of Representatives
		Clinical depictions	Clinical depictions	Clinical depictions	Clinical depictions
NIGHT		House of Representatives	President's reception and dance	Annual banquet	



A "Photographic Montage" of Chicago

In the background is Navy Pier. The Wrigley Building, and Tribune Tower flank the famous Ft. Dearborn Bridge. Near the top is the headquarters hotel—the Stevens. The dark building to the north of it houses the AVMA offices. The large building in the center is the Merchandise Mart, and below it the Adler Planetarium. Lower left is the Field Museum and to the right Soldier Field.

series, which will be under the direction of J. V. Lacroix of Evanston, Ill.

ALUMNI LUNCHEONS

Alumni luncheons will be held on the last day of the meeting—August 20. This time was selected because no other special program features are scheduled for the afternoon of that day, thereby allowing ample time for after-lunch conversations. Glenn L. Ebright of Hammond, Ind., and O. Norling-Christensen of Evanston, Ill., are in charge of arrangements.

Joint Statement by Board of Governors of the American Veterinary Medical Association and Committee on Veterinary Medicine of the Procurement and Assignment Service

On pages 196-197 of the current (May, 1942) issue of *Veterinary Medicine* is an article attacking the dog-food-testing program supervised by the Joint Committee on Foods of the American Veterinary Medical and the American Animal Hospital associations. Disregarding other allegations the accuracy of which may be judged by others, the undersigned register earnest exception to one paragraph, the statements in which, in addition to being inaccurate and irrelevant, we regard as a distinct disservice to the profession and the country at this time. The paragraph in question is as follows:

> In the present war, when the government has been bending every effort to increase livestock production, it has found the officials of the A. V. M. A. head over heels in a matter entirely foreign to human food production. No representative of the veterinary profession is included on the board appointed by the President to administer the Procurement and Assignment Service for Physicians, Dentists and Veterinarians for National Defense. The fate of the veterinarians in this respect is in the hands of physicians and dentists, with veterinarians on subcommittees only.

Primarily, this is an attempt to exaggerate, since "officials of the A. V. M. A." are required to give only routine attention to the dog-food-testing program. The second statement is totally irrelevant because there is not the slightest basis for connecting the matter of veterinary representation, or the lack of it, on the Directing Board of the Procurement and Assignment Service with the dog-food-testing program. The last statement in the paragraph is especially objectionable because it is apparently designed to provoke among veterinarians doubts concerning, and a distrust of, the administration of an agency officially approved and authorized by the President to perform an important defense function.

The statements regarding the Procurement and Assignment Service are particularly objectionable and untimely because they appeared at the very time when the official enrollment forms, questionnaires and covering letters were in the mails for circulation to all veterinarians. Thus, by creating doubts about the administrative set-up of the Service, the statements referred to may have a harmful effect upon the whole-hearted response which veterinarians should make to the plea by the chairman of the Directing Board.

Furthermore, the statements are objectionable because, regardless of intent, their implications are such as to cast an unjustified reflection upon outstanding representatives of the medical and dental professions who are officially charged with and are carrying on, at great personal sacrifice, the supervision of an agency for the benefit of the country and all regular fields of medicine, including our own.

The last two statements in the paragraph cited are also unwarrantable because they give a false impression of the actual workings of the Procurement and Assignment Service as it affects veterinarians. It is needless to say that a veterinary member of the Directing Board would have been a welcome recognition. For the record, it may be said that such representation has been sought: There has been no neglect in this respect by those responsible for AVMA participation. As a matter of plain fact, however, even without actual veterinary representation upon the Board itself, every matter affecting veterinarians and the veterinary profession has been referred by the Board to veterinarians. The Directing Board has been scrupulous in this respect. We desire to record appreciation of the unfailing courtesy and consideration which has been accorded to veterinary problems and the Committee on Veterinary Medicine by the chairman of that board, Frank H. Lahey, M.D., president of the American Medical Association, other members of the Board and, in particular, its executive officer, Lt. Colonel Sam F. Seeley, M.D.

It should be fully understood that the "fate" of veterinarians, in so far as the operations of the Procurement and Assignment Service are concerned, is in the hands of veterinarians, the statement to the contrary in *Veterinary Medicine* notwithstanding. To imply otherwise is to ignore or deliberately disregard the origin, organization, functions and workings of the agency, concerning which complete information has been published in the official organ of the AVMA for the past five months. The veterinary phases of the organization bear restatement for the record.

In the central organization there is a Committee on Veterinary Medicine serving in an advisory capacity to the Directing Board. There is a veterinary consultant to the Committee on Information. In the regional organization there is a veterinary member on each of the nine corps area committees. In each state and the District of Columbia, there is a Veterinary Preparedness Committee headed by a veterinary

state chairman, both selected by and with the approval of the state veterinary medical association independent of any dictation at "the hands of physicians and dentists." These state veterinary committees, with the guidance and assistance of the veterinary corps area members, are in complete charge of the detailed operations of the Procurement and Assignment Service affecting veterinary personnel exactly the same as similar medical and dental committees function for physicians and dentists. Throughout the whole process of organizing the component bodies of the Service, veterinary representatives have been selected and nominated by no one but veterinarians themselves.

The truly vital point which the writer of the article in *Veterinary Medicine* utterly misses in his concern over the "fate" of veterinarians is this: What would have been their fate had they not been included in the agency which was originally conceived for physicians only? Our profession should be thankful that, through the broad-mindedness of physicians, we were included and are privileged to work out our personnel and professional problems in defense and war efforts with them. Otherwise, we would have found ourselves struggling alone with the regulations of the War Department, Selective Service Administration and other governmental agencies whose job it is to dispose of the country's man power as may be necessary. For the first time in the history of our country, the medical, dental and veterinary professions are engaged in a common undertaking: the mobilization of their members under a common leadership to insure the maintenance of professional services for military, civilian and industrial needs.

Finally, we regret the appearance of statements such as are herein commented upon which may provoke misunderstanding and discord among elements of our profession at a time when all individuals and groups should be striving toward unity of purpose and service to the nation. We urge every veterinarian to keep this goal in mind.

Board of Governors, American Veterinary Medical Association

(Signed) O. V. BRUMLEY, *Chairman.*
H. W. JAKEMAN,
W. W. DIMOCK.

Committee on Veterinary Medicine, Procurement & Assignment Service

(Signed) J. G. HARDENBERGH, *Chairman.*
W. A. HAGAN,
H. W. JAKEMAN,
CASSIUS WAY.

President Jakeman's Timely Message.—Do you realize that the veterinary profession of America has been drafted? The U. S. Government, through the Office of Defense Health and Welfare Services, has called upon the American Veterinary Medical Association to mobilize the strength and resources of the entire profession to meet both military and civilian needs. This is a responsibility to the government and to the public which calls for a united front. It means that every veterinarian in the United States who is eligible has a moral and patriotic obligation to support the profession through membership in the organization which is representing it.

Regardless of the field of endeavor in which a veterinarian might be engaged and no matter what his reasons may have been in the past for not being a member of the A. V. M. A., the existing national emergency has created a situation which demands that every veterinarian support the organized efforts of his profession.

The A. V. M. A. needs your membership. It has about 7,000 members, but should have about 12,000. It needs more funds with which to perform work expected and demanded—work which it has been, is and will be doing for you. As a veterinarian, you cannot escape the fact that had it not been for the A. V. M. A., you would not be a member of a profession which has risen to one of great importance to the livestock industry and human welfare. You would not be classified by the Procurement and Assignment Service with physicians and dentists in this national emergency. In short, you owe much to the A. V. M. A.

As president of the Association and on behalf of our profession, I appeal to you to do your part in assisting to present to the nation the limit of our numerical strength. You will also assist financially in making it possible for the profession to do a good job in meeting its national responsibility.

Contact a member, or write the A. V. M. A. office NOW for an application blank.

Anticipating your coöperation,

H. W. Jakeman, President,
Boston, Mass.

War Savings Stamps and Bonds.—The AVMA pledges its all-out effort to induce its members and their friends to buy Uncle Sam's War Savings Bonds and Stamps as a regular duty "until it hurts." A half-hearted war effort based upon a misconception of the nation's needs or upon the let-George-do-it policy would be a dangerous trend among professional men.

Proposed Amendments to Constitution and Administrative By-Laws

The following proposals have been made during the past year, either at the annual meeting in Indianapolis or since then. Those made last year are republished for the information of all members, especially delegates to the AVMA House of Representatives.

The amendments to the By-Laws proposed since last year are published in accordance with Section 3, Article XIII, of the Administrative By-Laws which reads:

Section 3.—Excepting sections affecting the corporate officers provided in the constitution, the administrative by-laws may be permanently amended at any annual session by submitting, in writing, notice thereof to all the membership 90 days prior to the annual session at which final action is to be taken. Publication of proposed amendments in three consecutive issues of the JOURNAL shall be regarded as due notification to the members.

These proposals will be published again in the June and July issues of the JOURNAL in accordance with this provision.

Proposal No. 1.—Amend Article V, Section 5 of the Constitution so that it will read:

"Two members of the Executive Board and the chairman of the House of Representatives shall constitute the Board of Governors, which shall have charge of the administrative affairs of the Association between the regular meetings of the whole Board. It shall consist of the president, the president-elect and the chairman of the House of Representatives, and shall hold meetings at such times and places as the chairman may direct.

"It shall make an annual report of its actions to the whole Board which shall be included in the records of the Executive Board." (Submitted by J. C. Flynn to the Executive Board and House of Representatives at the Seventy-Eighth Annual Meeting, August 11-15, 1941).

Proposal No. 2.—Add a new subparagraph to Section 2, Article VIII, Administrative By-Laws, to read:

"d) The terms of office of members of the Executive Board shall terminate at the end of the annual meeting held during the last year of the term for which they were elected." (Submitted by Executive Board to House of Representatives at Seventy-Eighth Annual Meeting, August 11-15, 1941).

Proposal No. 3.—Amend Section 3, of Article VIII, Administrative By-Laws, by adding a new paragraph to read:

"a) Vacancies occurring on the Executive Board for any reason during the term for which the member was duly elected, shall be filled by appointment to be made by the president, the appointee to serve until election can be held in the shortest possible time, except in the case of the member-at-large, which shall be filled by election at the next general assembly." (This proposal offered by House of Representatives at Seventy-Eighth Annual Meeting, August 11-15, 1941).

Proposal No. 4.—Add a new section, to be numbered Section 12, to Article IX of the Administrative By-Laws to read:

Section 12.—"The House shall elect a chairman annually at the close of its last meeting held during a regular session of the Association. He shall be a duly elected member of the House of Representatives. He shall be elected by a majority vote of said House and shall hold office until his successor is elected and installed." (Submitted by J. C. Flynn, to the Executive Board and House of Representatives at the Seventy-Eighth Annual Meeting, August 11-15, 1941).

Proposal No. 5.—If the foregoing is adopted, then paragraph (a), Section 3 of Article II, Administrative By-Laws, should be changed by striking out the words "and at all sessions of the House of Representatives" so that the paragraph would then read:

"a) The president shall preside at all general sessions but is empowered with the authority to yield the chair to the senior vice-president available for the performance of these duties." (Submitted by J. C. Flynn, to the Executive Board and House of Representatives at the Seventy-Eighth Annual Meeting, August 11-15, 1941).

Proposal No. 6.—Amend subparagraphs (c) and (d), Section 2, Article X, Administrative By-Laws to read:

(c) Dues shall be $7.00 a year, of which $2.50 is for payment of one year's subscription to the official JOURNAL of the Association. Dues are payable in advance on January 1 of each year.

"d) Membership Fee and Dues.—The membership fee shall be $5.00, and dues, which include subscription to the JOURNAL, shall be $7.00. Both are payable in advance at the time the application is filed. But, in order that the dues and subscriptions shall run from January 1, of each year, the following amounts shall be remitted with each application filed during a given month.

January	$12.00	July	$8.50
February	11.42	August	7.92
March	10.84	September	7.34
April	10.25	October	6.75
May	9.67	November	6.17
June	9.09	December	5.58

Of the annual dues of $7.00, $2.50 is to be credited as subscription to the JOURNAL.

(The proposal to increase dues submitted by Executive Board to House of Representatives,

Seventy-Eighth Annual Meeting, August 11-15, 1941).

Proposal No. 7.—Amend subparagraph (a), Section 5, Article X, Administrative By-Laws by striking out the words "and completed" so that the paragraph would then read:

"a) Junior members recommended as being in good standing in their respective junior chapters for three years may be admitted to membership without the payment of the membership fee of $5.00, provided the application is filed within 30 days after the date of their graduation." (Submitted by Executive Board to House of Representatives, Seventy-Eighth Annual Meeting, August 11-15, 1941).

Proposal No. 8.—Amend Article XII, "Committees—Standing and Special," by adding to Section 1 the following:

9. COMMITTEE ON NUTRITION

a) Personnel.—This committee shall consist of five members, one of whom shall be appointed annually by the President for a term of five years. The first membership shall be appointed for one, two, three, four and five years, respectively, for terms expiring in the same order.

b) Duties.—It shall be the duty of this Committee to study and report annually, or more often, upon developments in the science of nutrition significant to veterinary science and education.

10. COMMITTEE ON POULTRY

a) Personnel.—This committee shall consist of five members, one of whom shall be appointed annually by the President for a term of five years. The first membership shall be appointed for one, two, three, four and five years, respectively, for terms expiring in the same order.

b) Duties.—It shall be the duty of this Committee to study and report annually, or more often, upon the fields of poultry science and pathology and their application by veterinarians to the problems of poultry diseases. (Submitted by Cliff D. Carpenter.)

Proposal No. 9.—Amend the entire Article XVIII, Administrative By-Laws, entitled "Local Secretaries" so that it will read:

"Section 1.—It shall be the duty of each constituent association to nominate one of its members as the resident state secretary of the AVMA and to submit his name for appointment by the president-elect. The nomination shall be made by the constituent association at its stated meeting prior to the AVMA convention.

"a) Tenure.—The term of office shall be two interconvention years. The announcement of the election of resident state secretaries shall be made at each annual convention and published in the JOURNAL the first or second month following the annual convention."

"b) Duties.—The duties of resident secretaries are (1) to maintain a continuous liaison between the constituent and the national associations on all matters appertaining to the work of the veterinary profession, (2) to aid the executive secretary in promoting the welfare of the membership within his jurisdiction, (3) to assist in enlarging the membership and (4) to report news of general interest for publication, particularly new legislation and regulations pertaining to the veterinary service."

"c) Resident secretaries and foreign correspondents in territories not having a constituent association shall be appointed by the president-elect for a term of one interconvention year. (Submitted by Executive Board of the House of Representatives, Seventy-Eighth Annual Meeting, August 11-15, 1941).

Priorities for Veterinary Instruments.—In regard to the Association's stated effort in behalf of veterinary supplies comes the following news from the Health Supplies Section of the War Production Board: "J. G. Hardenbergh, Executive Secretary:—Under the Nickel Restriction Order, M-6-b, nickel plating of surgical and veterinary instruments was prohibited. However, a few days after the order was issued, an exemption of three months was granted for the manufacture and repair of surgical, dental and veterinary instruments. During the three-month period tests are to be made on instruments plated with silver. When these reports are assembled it will then be decided whether or not these industries are to be allowed the use of nickel plating. We realize, of course, that no other plating will be as satisfactory as copper-nickel-chrome plating, but since there is not enough nickel available for direct war needs, it is more than likely that a substitute will have to be used in place of nickel. It would be our suggestion that manufacturers of surgical, dental and veterinary instruments find a suitable substitute as soon as possible."

s/James H. Burton,
Health Supplies Section,
4092 Railroad Retirement Bldg.,
Washington, D. C.

April 17, 1942

The Association's First Selectee

Fred L. Andersen, who has had charge of the AVMA circulation department for three years, left on April 22 for training in the country's armed forces—assigned to parts unknown. Buddy, as he was affectionately called about the office, will be recalled as the busy young man who looked after "everything" at the last three conventions.

Dr. and Mrs. Hardenbergh entertained the office staff at a farewell dinner at the Stevens Hotel on April 15 in honor of Buddy.

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Journal of the American Veterinary Medical Association

U. S. Defense BONDS ★ STAMPS

APPLICATIONS

First Listing*

BRANDLY, PAUL J.
1804 West Congress St., Chicago, Ill.
D.V.M., Kansas State College, 1933.
Vouchers: E. M. Lynn and J. G. Hardenbergh.

BULLER, G. L.
Brookshire, Texas.
D.V.M., Ohio State University, 1916.
Vouchers: Frank Hecker and H. Schmidt.

CRUSE, C. L.
930 N. W. Blvd., Winston-Salem, N. Car.
D.V.M., Kansas City Veterinary College, 1914.
Vouchers: J. H. Brown and A. A. Husman.

FARGUS, GRANT I.
P. O. Box 215, Mercersburg, Pa.
V.M.D., University of Pennsylvania, 1917.
Vouchers: Roy F. Davenport and Vincent C. Moyer.

FEHRENBACHER, P. T.
Philo, Ill.
D.V.M., Chicago Veterinary College, 1915.
Vouchers: E. M. Lynn and L. A. Merillat.

FOUST, JOHN W.
Hope, Ind.
D.V.M., Indiana Veterinary College, 1917.
Vouchers: J. L. Axby and J. L. Kixmiller.

GILES, D. D.
542 Park St., Nacogdoches, Texas.
D.V.M., Texas A & M College, 1922.
Vouchers: C. C. Young and H. Schmidt.

HUNT, B. C.
5233 Irving Park Rd., Chicago, Ill.
D.V.M., McKillip Veterinary College, 1919.
Vouchers: E. M. Lynn and L. A. Merillat.

LAW, JOHN J.
Hopkins, Mich.
D.V.S., Grand Rapids Veterinary College, 1906.
Vouchers: Wm. Hansen and C. F. Clark.

LIVINGSTONE, J. M.
643 East 83rd St., Chicago, Ill.
B.V.Sc., Ontario Veterinary College, 1937.
Vouchers: A. G. Misener and D. C. Reid.

LOWE, O. E.
Charlottesville, Ind.
D.V.M., Indiana Veterinary College, 1912.
Vouchers: J. L. Kixmiller and H. J. Weaver.

MCDONALD, G. G.
P. O. Box 24, Brighouse, B. C.
B.V.Sc., Ontario Veterinary College, 1921.
Vouchers. S. N. Wood and J. G. Jervis.

MILLER, W. E .
303 N. Swarts, Abingdon, Ill.
D.V.M., Iowa State College, 1902.
Vouchers: E. M. Lynn and J. G. Hardenbergh.

*See January, 1942 issue, p. 92.

NEFF, NOBLE W.
Milford, Ind.
D.V.M., Indiana Veterinary College, 1918.
Vouchers: John L. Kixmiller and A. S. Einoris.

PEASE, FRED W.
3300 S. Congress Ave., Austin, Texas.
D.V.M., Texas A & M College, 1932.
Vouchers: H. Schmidt and John H. Milliff.

PERKINS, R. W.
R.F.D. No. 3, Houlton, Maine.
B.V.Sc., Ontario Veterinary College, 1918.
Vouchers: S. W. Stiles and Geo. M. Potter.

RICHARDSON, ALTON
2 Pleasant St., Waterville, Maine.
B.V.Sc., Ontario Veterinary College, 1936.
Vouchers: S. W. Stiles and Geo. M. Potter.

SCOTT, VERNE A.
c/o John Tarleton Agricultural College, Stephenville, Texas.
D.V.M., Kansas City Veterinary College, 1918.
Vouchers: H. Schmidt and R. P. Marsteller.

SHULTZ, GUY L.
148 Spring Road, Carlisle, Pa.
B.V.Sc., University of Toronto, 1939.
Vouchers: C. R. Babe and James K. Strockbine.

TYLER, LEONARD L.
74 Greenwood St., Canisteo, N. Y.
D.V.M., Cornell University, 1930.
Vouchers. A. J. Paddock and David W. Cheney.

VELD, EDWARD
South Holland, Ill.
M.D.C., Chicago Veterinary College, 1910.
Vouchers: L. A. Merillat and J. G. Hardenbergh.

VON GLAN, EDWARD H.
Veterinary Station Hospital, Schofield Barracks, T. H.
D.V.M., Iowa State College, 1938.
Vouchers: C. H. Covault and Marvin R. Hales.

WITTER, W. F.
P. O. Box 436, Richmond, Va.
D.V.M., Cornell University, 1934.
Vouchers: A. J. Sipos and H. T. Farmer.

Second Listing

Allmon, Horace Raymond, 1121 Park Drive, Hillsboro, Texas.
Bartley, Frank E., Westboro, Mo.
Baynes, W. R., 322 Agri. Bldg., Raleigh, N. C.
Brockmein, E. A., Manchester, Iowa.
Brodner, Meier, 323 Livestock Exchange Bldg., Sioux City, Iowa.
Brundage, H. S., 6341 Broadway, Chicago, Ill.
Burby, J. W., 2423 Broadway, San Antonio, Texas.
Coffin, David L., 4418 Osage Ave., Philadelphia, Pa.

Fogel, S. H., Greenwood, Miss.
Jones, Robert B., 206 E. Wade St., Wadesboro, N. C.
Koshland, Edwin M., 231 E. Church St., Williamsport, Pa.
Larson, M. C., Keystone, Iowa.
Logie, Abby J., 3015 Paseo, Kansas City, Mo.
Merriman, R. W., 417 W. Capitol Ave., Springfield, Ill.
Miller, J. P., 814 6th St., Boonville, Mo.
Morgan, W. R., Main St., Shelburne, Ont.
Myers, W. W., 1795 Moore St., San Diego, Calif.
Nelson, R. S., Tonasket, Wash.
O'Hara, Charles B., Eaton, Ohio.
Oliver, V. T., c/o Southwest Veterinary Hospital, 7731 S.W. Capitol Hwy., Multnomah, Ore.
Olthouse, Martin, 116 N. Otsego, Jackson, Mich.
Padfield, Cyril J., 1437 Riverside Drive, Los Angeles, Calif.
Paxton, John D., 4990 Ventura Ave., Fresno, Calif.
Smith, F. W. B., 739 Hastings St., W., Vancouver, B. C.
Stephenson, Alfred R., Bennett, Iowa.
Stevens, Blair A., 176 15th St., Oakland, Calif.
Thomson, Willis A., County Agent's Office, La Crosse, Wis.
Williams, Roy C., New Richland, Minn.
Worton, Harold, 734 Water St., Petersborough, Ont.

U. S. GOVERNMENT

BAI Transfers and Personnel News*

Clyde D. Bailey from St. Louis, Mo. (meat inspection) to Danville, Ill. (in chg. meat inspection).

Abraham Barton from San Juan, P. R. (tuberculosis) to New York, N. Y. (meat inspection).

Mark Robert Boyer from Philadelphia, Pa. (meat inspection) to Danville, Ill. (meat inspection).

Clifford B. Bratager from West Fargo, N. D. (in chg. meat inspection) to St. Louis, Mo. (Asst. in chg. meat inspection).

Clinton E. Burkeholder from Cheyenne, Wyo. (tuberculosis) to Jefferson City, Mo. (tuberculosis).

Gilbert W. Carl from Montpelier, Va. (Bang's disease) to Augusta, Me. (tuberculosis).

Fred E. Castro from Pearl River, N. Y. (virus-serum control) to Omaha, Neb. (virus-serum control).

W. Douglas Dean from Jackson, Miss. (tuberculosis) to Chicago, Ill. (meat inspection).

Charles W. Deming from Des Moines, Ia. (in chg. meat inspection) to Wichita, Kan. (in chg. meat inspection).

Myles J. Edwards from Hartford, Conn. (tuberculosis) to Augusta, Me. (tuberculosis).

Steven G. Fortune from Wichita, Kan. (in chg. meat inspection) to Piqua, Ohio (in chg. meat inspection).

Melvin J. Hatter from New York, N. Y. (meat inspection) to Detroit, Mich. (meat inspection).

Donald W. Hott from Columbus, Ohio (Bang's disease) to Albuquerque, N. Mex. (field inspection).

Abner K. Kuttler from Boise, Idaho (in chg. tuberculosis) to Chicago, Ill. (in chg. tuberculosis).

Dana A. LaMar from Piqua, Ohio (in chg. meat inspection) to West Fargo, N. Dak. (in chg. meat inspection).

Edward Lapple from Sioux City, Ia. (virus-serum control) to E. St. Louis, Ill. (virus-serum control).

James K. McNamee from Baltimore, Md. (tuberculosis) to Charleston, W. Va. (tuberculosis).

Roy L. Mesenbrink from Jefferson City, Mo. (tuberculosis) to St. Louis, Mo. (meat inspection).

George P. Rebold from Omaha, Neb. (virus-serum control) to Berkeley, Cal. (virus-serum control).

Oscar Sussman from Charleston, W. Va. (tuberculosis) to Richmond, Va. (tuberculosis).

Virgil A. Yount from Oklahoma City, Okla. (Bang's disease) to Little Rock, Ark. (tuberculosis).

Murray J. Myers, assistant veterinarian on interstate inspection work at Jersey City, N. J., retired.

Charles N. McBryde, Ames, Iowa, at the age of 70, after 40 years of service as a bacteriologist was retired February 28. Dr. McBryde is well known in the veterinary circle as one of the trio—Dorset, Niles and McBryde—who, after years of diligent research, worked out the virus-serum vaccination which was to revolutionize swine production in the United States. His more recent work has been the development of crystal violet vaccine and methods of preserving meat and meat-food products. One result credited to him is a method of reducing spoilage in hams. Secretary of Agriculture Claude A. Wickard expressed his appreciation for the many years of service and the benefits American agriculture derived therefrom.

Army Veterinary Service

The usual listing of mutations of veterinary officers has been temporarily discontinued for comprehensible reasons. Besides being cumbersome now such a listing comes within the things *verboten* by the Office of the Censor. The space will, however, be given over to information of the more constructive sort on the functions of the Veterinary Corps. A separate column is devoted to the progress on Procurement and Assignment as it applies to the

*Parenthesized words indicate the line of duty.

veterinary service of the armed forces and civilian population.

Contrary to the general belief that there is no place for veterinarians in the armed forces, is the news that the Americans abroad are carrying out extensive operations wherever our troops are located: testing cows for tuberculosis, watching over the soldiers' "chow," and of course looking after the health of such transport animals as the forces have.

AMONG THE STATES

California

It has been definitely decided not to hold the State Fair this year owing to the uncertainties of the military situation, and several national societies which had arranged to hold meetings in California during state-fair week have likewise changed their plans. The purpose of these changes, as was the case of the AVMA, is to leave the lanes of travel open to the war effort, and to forego the pleasure of long vacations which can be postponed for a more appropriate moment. While California will miss its usual crowd of year-around guests, nobody complains.

• • •

Personal.—The position of poultry disease specialist established by the state legislature in 1941 was filled by the appointment of James F. Harr, D.V.M., through a competitive civil service examination. Dr. Harr, formerly assistant pathologist in the Los Angeles laboratory of the Division of Animal Industry, State Department of Agriculture, will serve on the Division staff at Sacramento.

Colorado

Fifty delegates from seven chapters of Alpha Psi Fraternity met in convention at Colorado State College, April 3 and 4. The following chapters were represented:

New York State Veterinary College, Cornell University.
College of Veterinary Medicine, Ohio State University.
School of Veterinary Medicine, University of Pennsylvania.
Division of Veterinary Medicine, Michigan State College.
Division of Veterinary Medicine, Colorado State College.
Division of Veterinary Medicine, Washington State College.
Department of Veterinary Medicine, Alabama Polytechnic Institute.

The officers chosen for the year were Winfield S. Stone, Ithaca, N. Y., president; F. X. Gassner, Fort Collins, Colo., vice-president; E. T. Booth, Philadelphia, secretary; and B. S. Fritz, Mariette, Pa., treasurer.

Alpha Psi is the pioneer fraternity of the veterinary educational system. Its membership exceeds 3,000 among whom are many of the country's most prominent veterinarians. Having always abided by its constitutional mandate, Alpha Psi must be credited with having wielded a powerful influence.

Connecticut

The oldest living producer of certified milk is Wilson H. Lee, 90 years old, who operates the Fairlea Farms at Orange. He has been on the directorate of the Certified Milk Producers' Association since it was organized.

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Preparedness Committee.—The State Veterinary Preparedness Committee, organized by the AVMA in connection with the Procurement and Assignment Service, held the second of a series of lectures on food inspection at Yale University, April 1. All graduate veterinarians are invited to attend these meetings. The following program was carried out:

F. D. Holford, D.V.M., chief veterinarian for the Borden's Farm Products Company, New York City.—What the Practicing Veterinarian can do to Help Farmers Produce Good Milk.

Dr. Allen Pond, past assistant sanitary engineer, U. S. Public Health Service.—Inspection Work and What the Veterinarian can do to Help.

Edwin Laitinen, *Chairman.*

District of Columbia

District Association.—The second quarterly meeting of 1942 was held April 21 at the Mayflower Hotel. S. O. Fladness, chief, Field Inspection Division, BAI, spoke on the subject, Disease Problems in Relation to Livestock Production and Distribution in South American Countries. Dr. Fladness recently returned from a visit of two months to South America.

s/W. M. Mohler,
Resident Secretary.

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Animal Rescue Service.—All of the humane societies, the veterinary medical association and the dog pound authorities within the District have combined under the sponsorship of the American Red Star Relief to form an animal rescue service to function in the event of air raids. Ten ambulances, 27 veterinarians, 17 veterinary hospitals and 2 trucks of the District dog pound were made available for the

purpose. The objects set down in the arrangement are:

1) To protect human beings from panic-stricken animals and gas-contaminated animals.

2) To prevent and alleviate the suffering of wounded animals after air raids.

3) To relieve air-raid wardens, police, firemen and demolition squads, etc.

4) To salvage injured living animals.

5) To inform and advise animal owners on how to care for their animals during and after air raids.

The Animal Rescue Service is directed by the presidents of the following societies:

Dr. A. E. Wight, District of Columbia Veterinary Medical Association.

Mrs. LeVerne Beales, Washington Animal Rescue League.

Mrs. Herbert W. Elmore, Washington Humane Society.

Miss Elizabeth Howry, Animal Defense Society.

Miss Virginia W. Sargent, Animal Protective Association.

Baroness Madeline Strackelberg, vice-chairman, American Auxiliary NARPAC.

The state director for the District of Columbia is C. B. Porter, treasurer of the Times Square Animal Rescue Service.

s/Wm. M. Mohler, *Secretary.*

Florida

More than 200 small farmers of Suwanee county have signed pledges to grow more pigs and bigger gardens to help meet the Government's food-for-freedom goals. All of the Farm Security borrowers are taking part and each of them gets a placard showing that he is growing a victory garden. The pigs are known as "Vic" pigs and the placard reads "I am raising a Victory Garden." The participants are also pledged to purchase one Defense Bond at $18.75 and as many defense stamps as possible.

Idaho

The name of E. T. Powell, secretary of the Idaho Veterinary Medical Association, should be added to the State Veterinary Preparedness Committee. Dr. Powell's name was not included in the list originally supplied the central office.

Illinois

State Association.—Falling in with the spirit of the Procurement and Assignment Service for veterinarians, Secretary Hastings sends the following letter to the members under date of March 24:

"To coördinate the various demands made upon the medical, dental and veterinary personnel of the nation and in the interest of their most efficient utilization, there has been established as one of the principal subdivisions of the Office of Defense Health and Welfare Service, an Office for the Procurement and Assignment of Physicians, Dentists and Veterinarians. This special agency was approved by the President of the United States, October 30, 1941, and functions through a central office (Major Sam F. Seeley, M.C., Director) located at 601 Pennsylvania Ave., N.W., Washington, D. C. and directs through Corps Area Committees, and State Veterinary Preparedness Committees.

"The Illinois State Veterinary Preparedness Committee personnel is as follows:

A. E. Bott, chairman.
T. M. Bayler, U. S. B. A. I.
C. E. Fidler, chief veterinarian.
Robert Graham, University of Illinois.
W. H. Shaw, state examining board.
D. E. Sisk, practitioner.

"All communications should be sent to the Chairman, A. E. Bott, P. O. Box 87, East St. Louis, Illinois.

"Since the Selective Service Act makes all men under 45 available for military service and inasmuch as certain veterinarians have been registered by draft boards, and since Procurement and Assignment Service for Physicians, Dentists and Veterinarians indicates that veterinarians may be deferred, with the approval of the Illinois State Veterinary Preparedness Committee, from induction into the army as privates, it is extremely important (if you are under 45) that you give the chairman of your state committee the following information concerning your military status:

1) Your status with your local draft board.
2) Whether you have made application for a commission in the Veterinary Corps, United States Army.
3) When you are granted a commission.
4) When you are called to service.

"It is not intended that veterinarians be utilized as privates. However, this classification is *deferred* only and is subject to change. Final decision remains with your local selective service board.

"It should be kept in mind that your committee is serving not only to protect the civil population, but also to assist in making available qualified veterinarians for other tasks should it become necessary to ask them to serve elsewhere. The fundamental principle upon which the Procurement and Assignment Service functions is that of proper and equitable distribution of all veterinarians of the entire country. A veterinarian is either essential in his present capacity or available for assignment in a dislocated capacity in a civilian, institutional, public health, industrial, government or military agency requiring his services for the duration of the war.

"By this method of approach it is believed that the indiscriminate dislocation of veterinarians which would endanger our animal population and our food supply will be avoided.

The appearance of animal plagues during times of emergency must be dealt with promptly, efficiently and with the least possible loss. Your entire coöperation is essential."

s/C. C. Hastings, *Secretary*,

Under the subject "National Questionnaire" Secretary Hastings has circulated the following letter to all veterinarians of the state:

"This letter is to impress upon you the importance of studying carefully the National Questionnaire which you have received. Answer all questions to the best of your ability and return it immediately according to instructions therein. In so doing you will not only be helping yourself and the veterinary profession but will be contributing your part in safeguarding our American way of life.

"As to your qualifications, this is an opportunity for every veterinarian to write his own ticket, so to speak. You can do this in the confines of your office, alone, using your own judgment, without outside influence or interference.

"The veterinary profession is proud of its assignment in this great emergency, and it behooves every veterinarian to coöperate. The Illinois State Veterinary Medical Association is hopeful that every veterinarian in the state will recognize his responsibility. This questionnaire was sent to every veterinarian in the United States for the purpose of mobilizing and classifying our profession in this country, so that in the complete mobilization for national defense the veterinary profession can most effectively carry on its duties in animal-disease control, the protection of the nation's food supply, and service with our armed forces.

"The National Questionnaire (mailed from the AVMA office in Chicago) will enroll all veterinarians of any age and requires immediate return in the franked envelope. This registration is for the best interest of the veterinarian; it is for our own protection and the protection of our communities. The responsibility for its return rests with you. It should be emphasized that we are serving not only to protect the civil population, but also to assist in making available qualified veterinarians for such other tasks as may become necessary.

"It is entirely possible that an outbreak of some animal disease, not now existing in this country, would require our service in some other state or in a distant locality. Since there is an over-all shortage of medical men in this country, we should be ever ready to do anything possible to assist in the prosecution of this total war.

"We are all expected to render some type of service in addition to the service we are now giving, and veterinarians should be thankful. Physicians, dentists and veterinarians are perhaps the only professional people who may be deferred from induction into the Army as privates. Final decision, however, rests with your local selective service board.

"The Selective Service Act makes all men under 45 available for military service. Veterinarians so registered should notify the Illinois State Veterinary Preparedness Committee, Dr. A. E. Bott, Chairman, P. O. Box 87, East St. Louis, Illinois, of their status with local draft boards.

We wish to stress the importance of all veterinarians returning the questionnaire promptly.

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The State Department of Health has organized a voluntary emergency water corps charged with the duty of keeping municipal water systems functioning and safe as a wartime measure. Ten zones of 6 to 16 counties each have been laid out for the purpose. One of its functions is watching against sabotage and to provide means of supplying water should waterworks break down, shades of Hong Kong and Batavia.

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Chicago Association.—A symposium on milk sanitation directed by Executive Secretary J. G. Hardenbergh of the AVMA was the feature of the April meeting held as usual at the Hotel Sherman. The program was divided into the following topics:

J. G. Hardenbergh.—Relationship of Milk Hygiene and Human Health.

Robert Graham, University of Illinois.—The Illinois Coöperative Program of Mastitis Prevention and Control.

The Diversey Corporation, Chicago, presented a motion picture on methods of producing clean milk.

Mrs. Glenn Ebright was the hostess at the ladies' entertainment, which has become an inseparable part of the Association's monthly sessions. Mrs. C. L. Miller and Mrs. Olaf Norling-Christensen, assisted.

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Personal.—Major L. A. Merillat, Jr., (U.S.M.A. '15) son of Editor Merillat of the JOURNAL, who left the military service in 1923 to engage in private business, has been re-commissioned with his former rank and has been assigned to the Army Air Corps. Commenting on the appointment, the sports editor of *The Chicago Morning Sun* recalling events of 28 years ago points out that the Major served with that rank in the 3rd division on the Western Front of World War I, after making some interesting football history with the Army team where he won a place on Walter Camp's All-American teams of 1913 and 1914. "Athletic Hero Joins the Fight" is the headline paying tribute to one of Chicago's First Ward families. Major Merillat was born at 1839 South Wabash avenue which became the site of the McKillip Veterinary College and is still a resident of that neighborhood which, for the second time, he

leaves to engage in the serious business of defending the American way of life.

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Up to March 9, there were 31 cases of undulant fever reported in the state. The number is one-fifth higher than for the same period of 1941. Often the disease is spread to human beings by drinking the raw milk of infected cows. The incidence can be greatly cut down by drinking only pasteurized grade A milk.—*From Circular to Local Health Offices, Department of Public Health.*

Eight cases of smallpox during the first two months of 1942 is a reminder that smallpox still lurks in the background among the unvaccinated.

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Preparedness.—All veterinarians of Illinois are enlisting in Gov. Green's defense program, according to Dr. C. E. Fidler, chief state veterinarian and a member of the Illinois State Preparedness Committee. Registering with the Procurement and Assignment Service is a very important duty identified with the work of veterinarians in the control of animal diseases, as the livestock population would be in a serious condition if constant vigilance were not exercised to control and eradicate infectious and contagious disease, Dr. Fidler asserted. Livestock health problems related to the war effort are being given special attention at this time and will continue during the duration. Losses from diseases of livestock not only reduce profits of producers but increase costs to consumers. A rigid sanitation and disease control program has been instituted, coöperating with the State Department of Welfare and Safety.—*The Chicago Daily News (April 8).*

Indiana

New District Association.—The Ninth Congressional District Veterinary Association was organized at North Vernon, February 27, 1942 in keeping with the trend to maintain local societies in all parts of the state and to participate in the work of the Procurement and Assignment Service for veterinarians. Wayne Alter of St. Paul (Ind.) spoke on that subject.

The officers elected were Roy Elrod, North Vernon, president; L. A. Clark, Bedford, vice-president; and E. W. Fry, Hope, secretary-treasurer.

The meeting held at Brownsville, March 19, on the invitation of Chas. W. Fisher of that city was a dinner session and was patronized by C. R. Donham of Purdue University, who spoke on cattle diseases, and State Veterinarian J. L. Axby, the after dinner speaker. The ladies were entertained at the home of Dr. and Mrs. C. A. Murray. A chicken dinner at the Methodist church was planned for the meeting at Hope on April 16. Thus was born another active local veterinary society for which the Hoosier state has become famous.

s/E. W. Fry, *Secretary.*

Michiana Association.—At the meeting held in Wakarusa, March 12, it was decided to hold a small animal and poultry clinic at South Bend in June along with the Northeastern and Northwestern associations.

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The Northwestern Association.—A dinner session was held at Boswell, February 26, with R. F. Smith as the host. The officers elected for the year were F. E. Andres, Remington, president; S. F. Gaynor, Logansport, vice-president; and R. F. Smith, Kentland, secretary-treasurer.

Iowa

Midwest Small Animal Association. — A notable meeting of the Midwest Small Animal Association was held at Burlington, March 19-20. A good attendance and a highly beneficial program are reported. Although but a few years old, the progress this society has made and the interest it has created in small animal medicine, in the absence of large cities within the bournes of its operation, make up a creditable showing in veterinary society work. The officers elected are: P. J. McGinnis, Champaign, Ill., president; Carl Kennedy, Moline, Ill., vice-president; Wayne H. Riser, Des Moines, Iowa, secretary-treasurer; C. M. Collins, Ottumwa, Ia., and C. E. Hunt, Mt. Pleasant, Ia., trustees.

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Northwestern (Iowa) Association. — The spring meeting was held March 25 at Milford on the occasion of the sixth annual northwest Iowa horse show. Questions pertaining to the use of horses in farm work were discussed. Among the speakers were State Veterinarian C. C. Franks; J. A. Barger, BAI inspector-in-charge; Profs. S. H. McNutt and C. D. Lee, of Iowa State College, and K. S. Preston, of Sioux City. M. Donohue, Milford, was elected president; I. W. Martin, Sibley, vice-president; and Edwin Fisher, secretary.

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Southwestern Association.—The spring meeting was held at the Chieftain Hotel in Council Bluffs, April 7. The program, aside from routine business, consisted of two literary sessions and a banquet with floor show, music and an address. The speakers and their topics were:

L. E. Willey.—Swine Erysipelas.

C. C. Franks.—Erysipelas Culture Distribution and Calfhood Brucellosis Vaccination.

J. D. Ray.—Effect of Heat on Hog-Cholera Virus.

P. V. Neuzil.—Parasitic Diseases of Poultry.

W. W. Larson.—Abattoir Retentions of Cattle and Hogs.

Eugene B. Ingmand. — New Therapeutic Agents.

Ashe Lockhart.—Strain 19 Brucella Abortus Vaccine.

A. H. Quin.—Large Animal Question Box.

J. A. Barger.—Tribute to Dr. Haxby's service of 50 years.

Col. H. E. Egan.—The War Effort in the Middlewest.

L. A. Merillat.—The AVMA and the Procurement and Assignment Service—and a banquet address.

Prof. R. K. Bliss.—Food, a Munition of War. The officers of the Association are R. C. Moore, Dunlap, president; J. W. Baer, Malvern, vice-president; Geo. H. Hawthorne, Clarinda, secretary-treasurer. The members of the executive board are A. H. Blair, Irwin; Geo. B. Senior, Creston; and F. D. Weimer, Anita.

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Honor a Distinguished Colleague.—At the celebration of the fiftieth anniversary of Dr. Robert J. Haxby's debut to professional life last month at Council Bluffs by the Southwestern Iowa Veterinary Medical Association, a speaker felicitating the Doctor for his long and useful service, pointed out that when the honored member graduated, the profession was blazing its way through virgin terrain. The Iowa school was in swaddling clothes, the AVMA had 262 members and at the annual meeting of that year in Boston, the attendance was 106—a record crowd the report reads. The attendance for the two years previous was under 100 and in 1888 in New York City only 40 registered. Therefore, during the professional life of men still in active practice a national association has developed with a membership flirting close to 8,000 which is the lion's share of the eligible total. Although too many remain nonmembers of the societies, the majority have shown the devotion, faith and courage of Telemanchus for their parentage.

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Student (AVMA) Chapter.—At the meeting of February 4, entertainment was furnished by the Ward Quartet. A report to the effect that the veterinary science dance was a pronounced success was written into the records by Joe Sexton. President Held spoke on the progress of the educational committee and the "honor code", and Ed Hanna in behalf of the freshman class complimented the freshmen for their action in upholding the honor system. Ken Marriot proposed the use of available educational films. The guest speaker of the evening and his subject was:

Prof. E. A. Benbrook.—The Veterinary Profession.

s/Jack W. Hylton, *Secretary.*

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Eastern Association.—President Jerry Wolfe announces active participation of the Association in disease control for wartime production. Hatchery inspection, culling poultry and diagnosis of poultry diseases are listed on the agenda and placed in the hands of capable reporters.

Central Association.—The senior veterinary students of Iowa State College were guests of the Association at a dinner session held in Des Moines, April 9. Secretary Wall reports an attendance of 80. Bovine mastitis was the principal topic.

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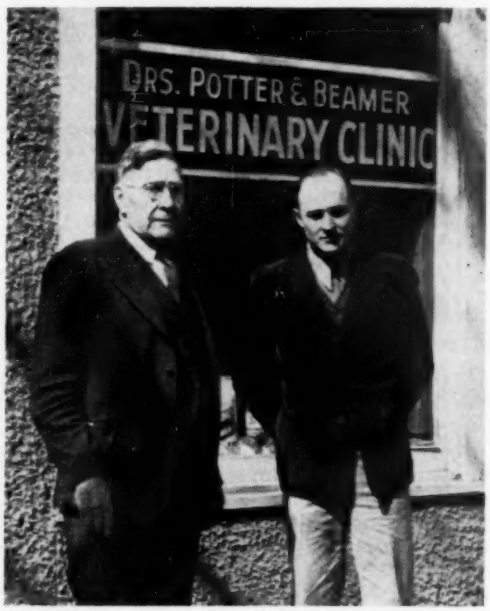
Dr. Potter's Golden Anniversary.—J. S. Potter, (C.V.C. '92) of Iowa City is being honored by the Eastern Iowa Veterinary Association, Inc., on the fiftieth anniversary of his graduation. Dr. Potter has served as president of that organization and of the Iowa Veterinary Medical Association. He has been a member of the A.V.M.A. since 1907. He was admitted to membership in the Loyal Order of Moose, Iowa City Lodge, in 1912, and missed being a charter member by a few weeks.



J. S. Potter (left), Iowa City, and his partner, R. J. Beamer.

Dr. Potter is a familiar figure on the country roads of Johnson County, where often he is seen returning to his office at daybreak after an all night vigil at some farm. His friends will sincerely wish for him many more years of active service in the community where he has practiced these past many years.

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Personal.—The marriage of Russell J. Beamer (I.S.C. '40), Iowa City, to Miss Grace Marguerite Guyette of Woodbine is announced. The ceremony took place at Bethany, Mo., February 14. Since graduating Dr. Russell has practiced in Iowa City as a partner of J. S. Potter.

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Poultry Clinic.—Sixty-five veterinarians from 22 counties attended a poultry clinic at the

office of Carl G. Spencer in Cedar Rapids on the evening of April 9, prompted by the determination to increase poultry production in the state. The program was arranged by the State Veterinary Preparedness Committee, of which A. R. Menary is chairman. Chief Veterinarian Franks gave a rousing talk on better wartime control of farm-animal diseases. Federal Inspector Dr. Geo. B. Senior of Creston gave a talk on poultry diseases which he illustrated with lantern slides. Autopsies were held by Drs. Senior, Crow and Neuzil. The May meeting was set for May 14 at Cedar Rapids. Drs. Bonstead, Waggoner, and Bevans were delegated to arrange the program.

Louisana

William Carver Scofield of the University staff has joined the fight for freedom. He is now Capt. Scofield of the Veterinary Corps with station somewhere in .....

Among the speakers at the meeting of the Jersey Cattle Club, April 14 were W. T. Oglesby and A. H. Groth, Department of Veterinary Science, Louisiana State University, who spoke on matters pertaining to the part dairy cattle must play in the food-for-freedom program.

T. C. Kirby (Tex. '41) has located for practice at Ruston.

Maine

State Association.—The quarterly meeting was held at the Animal Pathology Laboratory, University of Maine, April 8.

A. J. Neal (K. C. '17) of Bangor performed an operation on an umbilical hernia in a 450-lb. heifer under nembutal anesthesia. Fifty grains was found to produce an almost perfect degree of anesthesia.

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March "News Letter."—The Maine Veterinary Medical Association publishes a periodical named *Quarterly News Letter*, edited by Secretary J. F. Witter. The March issue is a multigram of nine pages describing past and coming meetings, case reports (see page 437 of this issue of the JOURNAL) technical information, professional advice and personal material.

At a meeting on January 14, held at M. E. Maddock's hospital in Augusta, the following officers were elected: A. E. Coombs, Skowhegan, president; Lawrence Batchhelder, Presque Isle, vice-president; and J. F. Witter, secretary-treasurer. The executive committee consists of C. M. Merrill, South Paris; C. E. Dutton, Saco; and L. N. Brown, Lewiston. The literary program contained the following:

Allan Richardson, Waterville.—Torsion of the Uterus in Cows.

B. J. Cady, BAI inspector-in-charge.—The Practitioner and Area Control of Bang's Disease.

S. W. Stiles, Falmouth Foreside, resident secretary (AVMA).—Problems of Practice. Prominent among the matters discussed were (1) the increase of fees due to the increased prices of drugs, (2) uniform charges for testing accredited herds, (3) objectionable extension service literature, (4) state veterinarian needed, and (5) the U. S. Government's recognition of the veterinary profession—join the AVMA.

The Association appointed Dr. Stiles as associate editor of the *Quarterly News Letter*, and Drs. Denton, Neal and Ingham, reporters.

Maryland

The McDonough School is the name of a training center to teach young people how to farm during vacation time. The care of livestock, machinery and soil are on the curriculum. Managing and working farm horses and the handling of dairy cows and dairy equipment are parts of the course.

Minnesota

Southwestern Association.—A meeting was held at Fairmont, April 22, writes Secretary H. H. Kanning. The literary program consisted of the following addresses by two veterinarians of University Farm:

W. L. Boyd, chief of the Division of Veterinary Science.—Vitamins and their Relations to Sterility.

M. H. Roepke.—Sex Hormones from a Therapeutic Standpoint.

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Personal.—C. E. Blye, Division of Veterinary Medicine, University Farm, University of Minnesota has been appointed acting editor of the sections on veterinary bacteriology and pathology of *Biological Abstracts*, published in Philadelphia. His predecessor is A. F. Seller of the University Farm staff who has entered the military service.

Missouri

Midwest Conference.—What promises to be one of the outstanding meetings of the year is the Midwest Veterinary Conference in Kansas City, June 29-July 1. The conference is sponsored by the Missouri and Kansas state associations and the National Veterinary Practitioner's Association. A feature of the session will be clinical demonstrations.

A strong program concerning the problems of the practitioner is being arranged. J. L. Wells, of the Haver-Glover Laboratories, secretary of the Missouri association is the general chairman, Glen L. Dunlap, of the Ashe Lockhart Laboratories, Inc., 800 Woodswether road, Kansas City, is the secretary-treasurer, and S. J. Schilling of Kansas City is the chairman of the Publicity Committee. The sessions will be held at the Municipal Auditorium.

Writes Chairman Schilling: "A previous midwest conference held in Kansas City in

1938 met with such favor that the forthcoming session has been arranged".

New York

Cornell Junior AVMA Chapter.—Honor Day Exercises were held in connection with the third annual dinner and dance of the Chapter at Willard Straight Hall, March 14. Edward A. Majilton, president of the Chapter presided. Addresses were made by Prof. Walter King Stone of the College of Architecture and Dr. H. W. Jakeman, president of the American Veterinary Medical Association (vide—pages 387-389). Dean William A. Hagan presented the following prizes:

The Addison D. Merry Prize given by Dr. A. E. Merry, '06, Syracuse, N. Y., for the best work in veterinary anatomy. First prize ($30), Merril Goodman, '44; second prize ($20), Charles C. Rickard, '44; honorable mention: Edwin B. Smith, '44 and Clarence P. Zepp, Jr., '44.

The Jane Miller Prize given by Dr. Frank H. Miller, New Rochelle, N. Y., for the best work in veterinary physiology. First prize ($25), Kenneth L. Gumaer, '43; second prize ($15), George K. Kiesel, '43.

The Charles Gross Bondy Prize given by Mr. Richard Bondy, New York, N. Y., for the best work in the courses in practical medicine and surgery of the small animals. First prize ($25), Arthur J. Jones, '42; second prize ($15), Lawrence Leveson, '42; honorable mention: Jean Mackerley, '42.

The Anne Besse Prize given by Miss A. B. Jennings, New York, N. Y., for the best work in medicine and clinical diagnosis. Divided equally ($20), Delano L. Proctor, Jr., '42, and ($20), Robert D. Smith, '42; honorable mention: Lawrence Leveson, '42.

The James Gordon Bennett Prize given by Mr. James Gordon Bennett, New York, N. Y., for the students who show greatest humaneness in handling animals, with special reference to the use of anesthesia. Divided equally ($20), Christian J. Haller, '41, and ($20), Howard S. White, '42; honorable mention: Fred B. Pulling, '42 and Wright I. Newton, '42.

The Alpha Psi Prize given by Beta Chapter of the Alpha Psi Fraternity for the member of the senior class who has shown by his scholarship, character and breadth of interest that he is best equipped to advance the standards of veterinary science. The prize consists of a gold watch. Awarded to Claudio E. Muskus, '42.

The Horace K. White Prize given by Mr. Horace K. White and his sons, Syracuse, N. Y., for the students whose academic records for the entire veterinary course are highest. First prize ($75), Claudio E. Muskus, '42; second prize ($25), Leon E. Blostein, '42; honorable mention: Benjamin Sann, '42 and Arthur J. Jones, '42.

Junior AVMA (Cornell) Thanks President Jakeman.—"The Cornell Chapter of the Junior American Veterinary Medical Association extends its sincere appreciation of your visit and your address at our banquet. We looked forward for months ahead of time to your coming, and we were well justified in our expectations. You more than fulfilled them.

"Most of us found your message very enlightening. We did not fully realize how active the A.V.M.A. is in carrying out numerous important functions. Personally, I was interested in hearing your viewpoints on public relations in different parts of the country. The Junior A.V.M.A. thanks you and we hope to see you back again. We wish you the best of luck in the projects you are undertaking.

Respectfully yours,
s/Edward Majilton, *President.*"

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Personal.—The Borden Company of New York City has employed Dr. Hugh H. Darby of Columbia University to work on the application of vitamins in fortifying human and animal foods.

Pennslyvania

To the Junior AVMA of his Alma Mater, President Jakeman writes:—"As the time approaches for many of you to enter the profession as Doctors of Veterinary Medicine, I am greatly pleased as President of the American Veterinary Medical Association to extend to you the hand of professional fellowship. May success crown your efforts and result in personal happiness derived from an abundance of the really worth while things in the life of a veterinarian. For all of you and for everybody, many uncertainties exist and we know that many hardships will be encountered as a result of the world conflict which is raging. Courage and determination to win are two of the traditional pillars upon which the veterinary profession has been built and our faith in the future is and will continue to be unshaken.

"You are entering the profession at a time when the future holds greater opportunities than ever before. Upon graduation you will be on the same social and educational level as men and women in the other learned professions. Veterinary medicine is just coming into its own in the world of medical sciences and it is the pleasant task of the young men entering the profession today to cement and further the advancement of professional standards. The AVMA is keenly interested in each and every one of you, for tomorrow you will be the leaders charged with the responsibility of carrying on. May you never forget nor become indifferent to the fact that full credit for the present high level of veterinary education and professional standing belongs to the American Veterinary Medical Association. Through it's 79 years of existence it has represented organ-

ized effort of the profession. The pioneers and leaders in the United States and Canada have pooled their ideas, aims and endeavors in the international veterinary association, which stands for or represents the profession in these two countries. The AVMA is constantly working in the interests of veterinarians in general, and therefore in the interests of each individual veterinarian. It requires the support and active coöperation of every member of the profession.

"May I extend to each of you best wishes for a happy and successful completion of your undergraduate work and a safe and satisfactory landing in the profession of veterinary medicine."

s/H. W. Jakeman, *President*,
Boston, Mass.

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Brig. Gen. Kelser and Dr. Yunker on Meat Inspection Program of College of Physicians.—The section on public health, preventive and industrial medicine of the College of Physicians, Philadelphia, devoted its stated meeting on April 6, 1942, to a symposium on meat inspection. The program follows:

R. A. Kelser, V.M.D., Brigadier General, U. S. Army (by invitation).—Meat Inspection in Relation to Public Health.

Elkan H. Yunker, V.M.D., chief, division of milk, livestock, meat and food, Philadelphia Department of Health (by invitation).—Meat Inspection in Philadelphia.

Joseph W. E. Harrison, P.D., (by invitation).—Filth and Adulteration in Meat Food Products.

Discussion opened by Hugh Smith, General Manager of the Better Business Bureau of Philadelphia, Inc., (by invitation).

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Keystone Association.—The public relations committee of the Keystone association, sponsored the broadcast of an article on yellow fever, which is one of a series to be aired under the general subject, What the Veterinary Profession Means to Mankind.

Through the efforts of the association the Board of Veterinary Medical Examiners successfully prosecuted a Philadelphia practitioner who had not paid his yearly license fee since 1923. He was required to pay all back fees including 1942.

A ruling in the Philadelphia courts concerning a case of veterinary dentistry went against the profession. After many years of unethical advertising the man was tried, and witnesses testified that the defendant had admitted practicing veterinary dentistry, but apparently due to political connections, he was not convicted.

s/Raymond C. Snyder,
Secretary.

Pearl Harbor Refugee.—Among the refugees of Pearl Harbor was Duke, Doberman Pinscher belonging to Commander Logan C. Ramsey, U.S.N., which was flown from Hawaii to Alameda, Calif., where he was received at the veterinary hospital of G. H. Barry to be expressed to Philadelphia. He arrived safely, says *Our Dumb Animals*, to the delight of Mrs. Ramsey and the children. The San Francisco SPCA, the report goes on to say, received many dogs from the armed forces for distribution to various destinations, thanks to Robert H. Morrison, prominent Honolulu veterinarian.

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D. M. Warren, distinguished member of the AVMA, has flown overseas to join the AEF in Australia. Dr. Warren, formerly on W. J. Butler's force in Montana, was serving as veterinary technician for J. W. Eshelman & Sons, stockfeed manufacturers, Lancaster, Pa., when he offered his services to the cause of freedom.

Wisconsin

Central Association.—The Central Wisconsin Veterinary Medical Association held an interesting meeting at Glenwood City, March 11. The guest speaker was Dr. Charles Kreblein. A feature of the meeting was a large animal and canine clinic directed by S. K. Andreason, W. F. Nolechek and C. M. Heth. At the banquet, M. L. Claflin officiated as toastmaster and R. Fenstermacher of the University of Minnesota gave an illustrated lecture on diseases of wildlife. Fifty members attended.

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Southeastern Association.—Seventy-five members of the Southeastern Wisconsin Veterinary Medical Association met at Beaver Dam April 16. Notwithstanding that Wisconsin veterinarians are particularly busy men, the members took time out to listen to talks by Capt. Joseph J. Peot, U. S. Army, R.O.T.C., University of Wisconsin, and Walter Wisnicky, chairman of the state Veterinary Preparedness Committee.

s/J. S. Healy,
Resident Secretary.

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Personal.—George J. Dedolph, BAI veterinarian engaged on the field force, resigned to enter private practice with his father at Mayville.

Can You Help Locate These Lost Members?

The aid of JOURNAL readers is solicited in locating the following members, mail to whom has been returned to the Association's central office. The last known address of each is given. Should you be able to provide information as to present residence, your advice via postcard or letter will be greatly appreciated.

Andrews, Whipple, 405 S. 11th St., Boise, Ida.
Attaway, Ray S., 422 Vermont St., Waterloo, Ia.
Broussard, Geo. P., 417 E. Main St., New Iberia, La.

Burns, Chas. G., Tallahasse, Fla.
Cornwell, James I., Star Route, Asheville, N. Car.
Dean, W. D., Tupelo, Miss.
DeMott, Andre R., Utica St., DeRuyter, N. Y.
Derrer, R. C., Gooding, Ida.
Dorney, George, Box 12, Pine Plains, N. Y.
Earhart, Capt. Robert N., Kelly Field, Tex.
Einhorn, Ralph W., c/o Court House, Nashville, Tenn.
Enge, Clifford O., Butterfield, Minn.
Eskeldson, James A., Pine River, Minn.
Funderburg, David, c/o Hotel, Oconto Falls, Wis.
Gates, Jr., Morse A., Box 236, S. Omaha Sta., Omaha, Neb.
Gleason, J. L., 43 Bemeda Ave., Toronto, Ont.
Griffith, A. R., Thomasville, Ga.
Griffith, Robert L., General Delivery, Inverness, Calif.
Harris, Fred M., 72 3rd Ave., San Mateo, Calif.
Hayes, Isaac E., 1012½ Wellington, Waterloo, Ia.
Hedler, Herbert R., General Delivery, Portland, Ore.
Hinkle, T. B., 301 Broadfoot Ave., Fayetteville, N. Car.
Holmes, John M., R.F.D., Chesterland, Ohio.
Huang, Fung Kuan, 127 Fifth Ave., San Francisco, Calif.
Huston, Sherbern S., 2723 Arlington Ave., Davenport, Ia.
Jackson, L. L., 1302 Sycamore, Corsicana, Tex.
Jerstad, A. C., Independent Packing Co., St. Louis, Mo.
Keane, John J., 26 Franklin St., Peabody, Mass.
Leasure, T. J., 809 Vermont, Lawrence, Kan.
Loomis, Ralph E., 10 Main St., Wellsboro, Pa.
Mathis, Rudy C., State Veterinarian, Atlanta, Ga.
Mawer, G. C., 1591 Elbur Ave., Lakewood, Ohio
Mesenbrink, R. L., General Delivery, Kirksville, Mo.
Millenbruck, Capt. Edwin, Veterinary Station Hospital, Fort Sill, Okla.
Mitchell, Howard H., Rolla, N. D.
Murphy, Claude F., Box 339, So. Omaha Station, Neb.
Niffenegger, D. L., Whiting, Ia.
Nuckolls, Melvin N., Marshalltown, Ia.
Orson, Capt. O. W., Station Veterinary Hospital, Fort Bliss, Tex.
Pinckard, W. L., State Veterinarian's Office, State Office Bldg., Nashville, Tenn.
Polansky, Henry, Box 249, Lewisburg, W. Va.
Prendergast, Bruce, Avon, Ill.
Schaefer, H. R., 1251 Tutwiler, Memphis, Tenn.
Schendel, Samuel A., Richmond, Kans.
Scothorn, M. W., 3004 Chamberlyne Ave., Richmond, Va.
Shelby, Clarence F., Winnsboro, La.
Spears, C. J., Dublin, Ga.
Spring, Jacob E., 314 Ayres, Corpus Christi, Tex.
Steckel, Leo M., c/o C. Paul, 7 S. Madison Ave., Spring Valley, N. Y.
Storm, Robert E., Co. B, Batt. 31st, 4th Platoon, Camp Grant, Ill.
Sullivan, Walter A., 509 Federal Bldg., Indianapolis, Ind.
Swart, P. Bruce, Medical Reception Center, Camp Grant, Ill.
Swindle, B. C., 209 W. Glenn Ave., Auburn, Ala.
Teller, W. Bruce, 210 N. Washington, Prescott, Ariz.
Title, Harold B., 233 Maple St., Laurel, Miss.
Thompson, J. C., c/o Dept. of Agriculture, Olympia, Wash.
Tuomy, Geo. F., Astoria, Ore.
Underwood, H. W., 121 Market St., Clearfield, Pa.
Voetberg, Henry G., 205 Post Office Bldg., So. St. Paul, Minn.
Watts, Lt. F. B., Fort Sam Houston, Houston, Tex.
Werrin, V. C., Lt. Milton, 409 S. 3rd St., Philadelphia, Pa.
Winter, E. F., Oxford, N. Car.
Zinober, Moses R., 1047 Post Office Bldg., St. Paul, Minn.

State Board Examinations

District of Columbia.—The Board of Examiners in Veterinary Medicine of the District of Columbia will hold an examination for applicants for license to practice in the District on June 10, 1942. For further information write I. M. Cashell, secretary-treasurer, 2818 L street, N.W., Washington, D. C.

Illinois.—The Department of Registration and Education announces an examination of candidates for license to practice veterinary medicine on July 27 and 28, 1942. The examination will be held at the Department's Chicago headquarters. Applications should be filed 20 days before that date. For details and application blanks write Superintendent of Registration, Department of Registration and Education, Springfield, Ill., or to L. A. Merillat, president.

Indiana.—The Indiana Veterinary Examining Board will hold examinations in Rooms 205-206, State House, Indianapolis, July 14. Inquiries relative thereto should be addressed to J. L. Axby, secretary, at that address.

Iowa.—The Iowa Veterinary Medical Examining Board will hold examinations for the

licensing of veterinarians June 8-9, 1942. Applicants are asked to be in the office of the Division of Animal Industry not later than 8 o'clock on the morning of June 8. For further information write Dr. C. C. Franks, chief, Division of Animal Industry, State Capitol Bldg., Des Moines.

Kansas.—The State Board of Veterinary Examiners will hold an examination for those who wish to secure a license to practice in the State at Manhattan on May 20, 21 and 22. For further particulars contact Dr. Thos. P. Crispell, secretary, Parsons, Kansas.

Nebraska.—The Bureau of Examining Boards announces that the next veterinary examination will be given June 22-23, 1942, in the State Capitol Building, Lincoln. All applications for this examination must be filed with the Bureau at least 15 days prior to the above date.

Wisconsin.—The Wisconsin State Board of Veterinary Examiners will hold an examination for license to practice veterinary medicine at the state capitol building in Madison, June 18 and 19. For details apply to V. S. Larson, Division of Livestock Sanitation, Madison, Wis.

COMING MEETINGS

Chicago Veterinary Medical Association, Chicago, Ill., May 12, 1942. Sherman Hotel. F. A. Anderson, secretary, 157 W. Grand Avenue, Chicago, Ill.

North Carolina State Veterinary Medical Association. Shelby, N. Car. June 25-26, 1942. J. H. Brown, secretary, Tarboro, N. Car.

Midwestern Veterinary Conference. Kansas City, Mo., June 29, 30 and July 1, 1942. Glen L. Dunlap, 800 Woodswether road, Kansas City, secretary-treasurer; J. L. Wells, Blue Springs, Mo., general chairman; S. J. Schilling, Kansas City, chairman, Publicity Committee.

National Veterinary Practitioner's Association. Kansas City, Mo., June 29-July 1, 1942. J. C. Flynn, secretary, 3026 Main St., Kansas City, Mo.

Virginia State Veterinary Medical Association. Hotel Stonewall Jackson, Staunton, Va., July 9-10, 1942. Banquet held on Thursday evening, July 9. E. P. Johnson, secretary, Blacksburg, Va.

American Veterinary Medical Association, Chicago, Ill., August 17-20, 1942. J. G. Hardenbergh, executive secretary, 600 S. Michigan Ave., Chicago, Ill.

DEATHS

La Verne C. Martin (C.V.C. '14), practitioner of St. Cloud, Wis., died March 17, 1942. After graduating Dr. Martin practiced with Theodore Roesch at Cedarburg. He was commissioned second lieutenant in the Veterinary Corps, Aug. 7, 1917 and was promoted to first lieutenant, May 18, 1918. He was discharged March 25, 1919. He was a brother of I. G. Martin, prominent Milwaukee veterinarian.

Roy H. Mills, D.V.M., B.S., (Wash. '21), sheep specialist of the California state department of agriculture, died at his home in Sacramento, March 25. Dr. Mills was a native son, having been born at Santa Rosa, Calif., Sept. 22, 1893. He was a recognized authority on sheep diseases and won the civil service title of Sheep Disease Specialist in 1937. In addition to his sheep work he also served for a time as a veterinary officer in the California National Guard. He is survived by his widow, his mother and a daughter.

Paul G. Remington, (Dartmouth, '00 and Yale '04), age 66, native of Chicago, former chief of the U. S. Bureau of Biological Survey, (1927-1934), died January 12, after a lingering illness. He was well known in the veterinary profession for the "three R's" he advocated and installed, promoting wildlife preservation (Research, Regulation and Refuges), and for the enactment of laws protecting migrant fowl by providing the now famous sanctuaries of that service. He held key positions in the forestry service for 23 years before entering upon the work of the wildlife agency.

Arthur A. Swaim, M.D.V., (McK., '09), 63 years old, traveling superintendent of Wilson & Company, died March 18, after a lingering illness of some months. Dr. Swaim was a native of Ohio. In 1902 he joined the BAI force as a lay inspector. As a veterinary inspector following his graduation he remained with the Bureau 19 years when, in 1927, he resigned to accept the position he held with Wilson & Company until the time of his death. He was cofounder, with the late Fred Eagle, of the organization known as "Sweagles" which is devoted to educational work on packing plant operations among the Wilson employes. His older colleagues will recall Dr. Swaim as a professional ball player—onetime pitcher in the Three I League. As a writer he is known as the author of material on meat products, which is used in the home study department of the University of Chicago.

VETERINARY PREPAREDNESS

Each month in this section, information will be presented on veterinary participation in the nation's war effort.

Fill Out Your Questionnaire and Enrollment Form!

The long-awaited Veterinary Questionnaire and Enrollment Form was placed in the mails April 15. Enclosed in the envelope were:

1) The questionnaire blank and enrollment form.
2) A covering letter explaining the purpose and importance of the survey.
3) A franked return envelope addressed to the "National Roster of Specialized and Scientific Personnel, Washington, D. C."

The forms are designed to require a minimum of writing and time as most of the questions are to be answered by check marks in appropriate columns.

Every veterinarian should fill out and return the enrollment form and questionnaire at once if he has not already done so.

Any veterinarian, irrespective of age, sex, physical condition, citizenship or present employment who has failed to receive the forms should notify the state chairman of his Veterinary Preparedness Committee (see April JOURNAL, pages 383-385) or the AVMA office directly.

Veterinarians already in military service are also urged to file their returns, so that the survey may be as complete as possible.

LICENSE TO PRACTICE NOT REQUIRED FOR ENROLLMENT

Several veterinarians who, by reason of their present employment or activity, are not required to be licensed for practice in their states of residence have inquired if they should or may enroll with the Procurement and Assignment Service. The statement on the form declares: "I, the undersigned, a duly licensed veterinarian, do hereby enroll, etc."

The answer is "Yes," by all means. It is desired that every veterinarian file his enrollment form and questionnaire, no matter what his present activity or license status may be.

Enrollment with P & A Service Does Not Relieve Veterinarians from Selective Service Registration

A member asks, "Does the filing of the questionnaire and enrollment form with the Procurement and Assignment Service relieve a veterinarian from registration under Selective Service?"

The answer is "No." Every male within the specified age groups is required to register with Selective Service in addition to any special survey or enrollment in which he may participate.

Selective Service registration is an over-all survey to determine the man-power in the United States, within special age limits, available for military service. The Procurement and Assignment Service for Physicians, Dentists and Veterinarians is a special survey, irrespective of age, to determine the man-power, and qualifications thereof, in the three professions available to meet all needs of the nation—military, civil, industrial and public health.

Commissions in Army Medical Administrative Corps Authorized for Veterinary Students

With the approval of the Secretary of War the Adjutant General of the Army, under date of April 17, 1942, authorized corps area and department commanders to commission qualified and *bona fide* male students at approved veterinary schools in the United States as second lieutenants in the Medical Administrative Corps, Army of the United States. Officers so appointed will not be ordered to active duty until eligible for appointment as first lieutenants in the Veterinary Corps. The authorization also applies to qualified students in approved dental schools in the United States. A similar arrangement has existed for some time for students in class A medical colleges.

The effect of this action is to permit qualified veterinary and dental students to remain in school until they have completed their education. Students who hold commissions as provided come under the jurisdiction of the Army and are not subject to induction under the Selective Service Acts.

Further provisions are:

Appointment will be made without reference to an examining board as prescribed in paragraph 20c, AR 140-5, and without reference to procurement objectives.

Applications and accompanying papers as prescribed in AR 605-10 will be forwarded by the dean of the dental or veterinary school to the Commanding General of the corps area in which the school is located, together with a certified statement that the applicant is a *bona fide* accepted matriculant in dentistry or veter-

inary medicine at the institution.

Officers appointed under these provisions will be discharged for the convenience of the Government, under the following circumstances:

(1) Discontinuance of dental or veterinary education.

(2) Matriculation at an unapproved school of dentistry or veterinary medicine.

(3) Failure to complete successfully the prescribed four-year course of dental or veterinary instruction.

(4) Failure to secure appointment in the Army of the United States (Dental or Veterinary Corps) within three months after completion of the prescribed four-year course of dental or veterinary instruction.

The Surgeon General will maintain adequate records to assure timely application for appointment as first lieutenant, Army of the United States (Dental or Veterinary Corps), and to assure discharge as provided above.

Students at approved schools of dentistry and veterinary medicine who already hold Reserve commissions in other arms or services will not be ordered to active duty until they:

(a) Come within the provisions of (1), (2), (3) or (4) above, or

(b) Successfully complete the prescribed four-year course of dental or veterinary instruction, in which latter event they may be transferred to the Dental or Veterinary Corps Reserve in the grade of first lieutenant, as an exception to the restrictions of letter AG 210.31 ORC (12-11-41) RP-A, December 13, 1941, Subject: "Suspension of transfers between the sections of the Officers' Reserve Corps."

Properly qualified students who are now enrolled and qualified new matriculants will be invited to submit applications for appointment, final approval in each case to be made by the War Department.

Re: Applications for Commissions in Army Veterinary Corps

The following letter has been sent by Sam F. Seeley, M.D., executive officer of the Procurement and Assignment Service, to veterinarians who have applied through that agency for commissions in the Army Veterinary Corps:

OFFICE FOR EMERGENCY MANAGEMENT
OFFICE OF DEFENSE HEALTH AND WELFARE SERVICES
Washington, D. C.

Dear Doctor:

On behalf of the Directing Board, I wish to congratulate you on being numbered among those hundreds of veterinarians who have written this office so generously offering their services to the United States Army.

I am informed by the Office of the Surgeon General that the Veterinary Corps Reserve is adequate to meet the anticipated needs for many months and that there are no vacancies for veterinarians even though they be placed in Class 1-A by their local induction boards. I regret, therefore, that we are unable to satisfy your desire to make formal application for an appointment. The National Headquarters of the Selective Service System recognizes that there is an overall shortage of veterinarians in the United States and has provided that the Corps Area Chairmen of the Procurement and Assignment Service may be called upon by you to consult with your local board should you be classified as 1-A. This office is mailing to every veterinarian an enrollment form and questionnaire. Should you be willing to serve not only in a military capacity but in such governmental, industrial or civil agencies as will require additional assistance during the war, we ask that you return these promptly in order that your Corps Area Chairman may promptly ask for a deferment on the grounds that you will secure an essential position in one of the above capacities.

Should you be inducted into the military service in an enlisted capacity, I am authorized by the Office of the Surgeon General to state that those qualified professionally and physically for commission may anticipate appointments upon formal application. Should you be inducted, write immediately to this office for the necessary application blanks.

I trust that all veterinarians essential in civil life will be deferred and that those who might be inducted will be found qualified for commission.

Sincerely yours,

s/SAM F. SEELEY, M.D.
Executive Officer
Procurement and Assignment Service

Our Neighbor to the South: Mexico

Mexico has a population of 19,500,000 and an area of 763,944 sq. mi.,—largest city: Mexico City with a population of 1,029,668, where the first veterinary school in the Western Hemisphere was established in 1854. The school, which has been in operation, has recently set out to develop the veterinary service that will meet the country's needs—a difficult but not impossible task. Lack of systematic control of farm-animal diseases is an acknowledged deterrent to the development of the Republic.

Aluminum Priorities.—Leg banding of poultry will have to be done with some metal other than aluminum owing to the shortage caused by airplane construction on a large scale. Poultrymen who used 150,000 pounds of aluminum last year will have to get along with a substitute metal, except for wing-banding of chicks for which 11,000 pounds have been allocated. The makers of aluminum ear tags for disease-control work in cattle await (Nov. 15) a ruling on their needs.

The planting of fruit-bearing shrubs and trees along fence rows and other waste land in order to furnish food and harbor for wildlife is one of the projects proposed by biologists of the Soil Conservation Service. Hazelnut, plum and blackberry are among the plants suggested.

THE EFFICIENT VETERINARY SERVICE of the UNITED STATES ARMY

immunizes the army's vast number of horses against:

1. ENCEPHALOMYELITIS by the intradermal injection of Equine Encephalomyelitis Vaccine

and

2. TETANUS by the injection of Tetanus Toxoid.

The strongest and richest organization in the history of the world, THE UNITED STATES GOVERNMENT, cannot afford to take a chance with these diseases—neither can the American farmer.

Printed matter suitable for distribution to horse owners, emphasizing the importance of this work, especially during our national crisis, will be furnished free of charge, upon request.

ASHE LOCKHART, INC.

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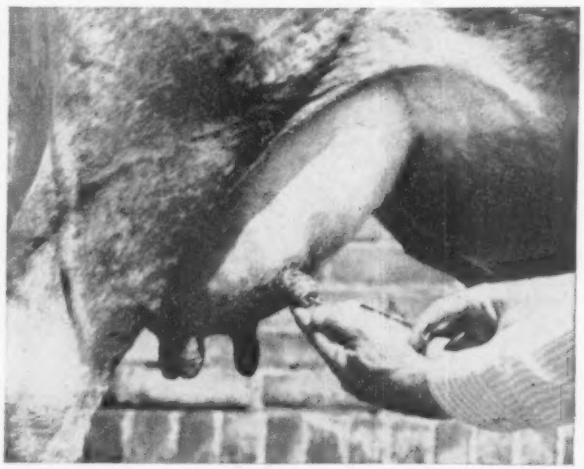
MEMBER Veterinary Exhibitors Ass'n

Treatment of Streptococcic Mastitis With Ty-Sin*

***(Combination of gramicidin and tyrocidin)**

Extensive investigations by Little *et al.* (Rockefeller Foundation for Medical Research), Schalm (University of California), and Greenberg and Bryan (Michigan State College) have shown that the use of gramicidin is an effective, practical means of combating Mastitis due to *Streptococcus agalactiae*. Gramicidin (now designated as tyrothricin, which contains both gramicidin and tyrocidin) is an alcohol-soluble, water-insoluble substance isolated from cultures of an aerobic sporulating soil bacillus. Studies by the Jensen-Salsbery Laboratories have resulted in the development of Ty-Sin, an aqueous alcoholic suspension of tyrothricin (gramicidin and tyrocidin). The active principles are released only from an aqueous medium. Each 20 c.c. of Ty-Sin contains 40 mg. of tyrothricin.



Use of Ty-Sin

Lactating Cows—After thorough stripping of the quarter, 40 c.c. of Ty-Sin, which constitutes an average dose, is injected into the milk cistern via the teat canal, under strict aseptic conditions. The quarter is massaged vigorously to disperse the material, and is milked out at the next regular milking. Treatment may be repeated in seven to ten days as indicated.

Dry Cows—One 40-c.c. dose is injected as above, except that the material is left in the quarter. Only one injection is given.

Reactions

In some cases the milk for one to three days may be clabbered, flaky, or stringy. Gross changes in the milk resulting from the treatment usually disappear by the end of the third day. In general, influence on quantity of milk secreted is less than 1 per cent.

Contraindications

Quarters manifesting acute inflammation or marked fibrosis or atrophy should not be treated. It is satisfactory to treat cases showing acute flare-ups after evidence of the inflammation has subsided.

Mastitis Control

In brief, control of Mastitis revolves about the early detection of infected cows, segregation of these animals, precautionary measures to prevent spread of the infection to other susceptible animals in the herd, and the use of Ty-Sin. Physical examination of the udder, use of the thybromol test, direct microscopic examination of stained milk smears, and bacteriological examination of properly collected milk samples are important steps in detecting the infection and appraising the results of treatment with Ty-Sin.

Results

Published data on the use of gramicidin indicate an efficiency of approximately 76 per cent in ridding infected quarters of *S. agalactiae*, which is responsible for over 90 per cent of Mastitis cases today. Controlled studies with Ty-Sin under the same field conditions confronting the practicing veterinarian have demonstrated the like efficiency of this product. On the basis of reactions to the treatments and effectiveness, Ty-Sin is definitely superior to colloidal silver oxide.

Our Laboratories offer Ty-Sin in 250-c.c. vials at $3.25, less discounts of 10 and 2 per cent.

(Write for Literature)

JENSEN-SALSBERY LABORATORIES, INC.
Kansas City, Missouri

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